

Historic, Archive Document

Do not assume content reflects current scientific knowledge, policies, or practices.

GLEANINGS IN BEE CULTURE

CONTENTS

MARKET QUOTATIONS	419
STRAWS, by Dr. Miller	423
PICKINGS, by Stenog	425
CONVERSATIONS WITH DOOLITTLE	426
EDITORIALS	427
Colorado Anti-honey-adulteration Law	427
Square or Tall Sections	428
Problem of Suitable Lumber for Sections	428
Clipping Queens' Wings; How to Do It	428
Price of Honey too Low	429
Coggshall on Entrance-closing	429
Simple Method Fastening Bottom-boards	430
Gen. Mgr. France; What He is Doing	431
New Danz. Bottom-board Improved	431
Right and Wrong Way to Handle Smoker	431
GENERAL CORRESPONDENCE	432
Eight-frame Jumbo Hives	432
The Brodbeck Smoker	433
Comb-honey Production	435
Increasing the Demand for Honey	437
Bee-paralysis	438
Cheap and Serviceable Wax-press	439
The New Foul-brood Cure	440
HEADS OF GRAIN	442
Self-spacing Rabbet for Frames; New or Old Comb for Bees; Parrots in the Apiary to Announce Swarming; Poisonous Fumes from a Strong Colony of Bees; Watkins Again; A Bottom-board Feeder; Hanging Hive-number Tags; Handy Device for Nailing Up Section-holders; Queen Incubator and Brooder; the Odor not Always Indication of Foul Brood.	
OUR HOMES	451
NOTES OF TRAVEL	453
SPECIAL NOTICES	464

THE A.I.
MEDINA



ROOT CO.
OHIO

U.S.A.

Western Edition

ENTERED AT THE POSTOFFICE AT MEDINA, OHIO, AS SECOND-CLASS MATTER.

Ready for Your Orders!

We have in stock ready for immediate delivery a

Carload of Root's Supplies

such as Dovetailed and Danzenbaker Hives, Cowan Extractors, Sections, etc., etc. If you want Root's goods be sure to specify it in making your order or inquiry. We also handle local-made supplies. Let us have your specifications early so we may not disappoint you when you need the supplies.

SMITH'S CASH STORE (INC.)
25 MARKET ST.
S.F.

Now Ready!

We have the largest stock of Root's goods that ever came to Kansas, and we are ready to supply your needs in the apiary. We can save you freight and time by buying of us.

Danz. Hives, Weed New Process Foundation, Cowan Extractors, Smokers,

and every thing that you will likely need. We are now booking orders for Buck's strain of Italian queens. Last year we were swamped with orders in the spring, so I wish to ask my customers to send in their orders early so as to avoid the rush. Send for 1903 catalog. The 1903 edition of A B C of Bee Culture for sale.

Carl F. Buck, Augusta, Kansas.
Butler County.

Colorado Bee-keepers!

Get our prices before purchasing elsewhere. We are selling first-class make of goods at lower prices than the cheaper goods can be purchased for. If requiring Hives, Sections, Honey-extractors, Shipping-cases, Knives, Bee Smokers and Veils, Comb Foundation, or any thing else in the line of

BEE-KEEPERS' SUPPLIES

you should remember that

The L. A. Watkins Mdse. Co.
Denver, Colorado,

are headquarters for the State, and furnish local associations who can use as much as a carload at carload prices direct from the factory, or smaller lots from our well-furnished warerooms in Denver, at prices that defy competition for equal quality of goods. We are agents for THE A. I. ROOT COMPANY'S GOODS for Colorado, and want to hear from bee-keepers in need of supplies. We buy honey and wax.

Let Us Hear from You.



Announcement!

We desire to call the attention of all bee-keepers in Washington, British Columbia, and adjacent territory, that we're now the Northwestern agents for

THE A. I. ROOT COMPANY, and are prepared to furnish from stock here, and at other Washington points, any thing required by bee-keepers. Send your specifications early. If we do not have the goods wanted this will enable us to get them in our next carload. Catalogs free.

LILLY, BOGARDUS & CO.,
Seattle, Washington.



Northern-grown Seeds, Trees and Plants,
Poultry and Bee Supplies, Spray Pumps,
Fertilizers and Garden-tools.

Honey Market.

GRADING-RULES.

FANCY.—All sections to be well filled, combs straight, firm, stained or otherwise; the comb unsoiled by travel or the surface of the cell sealed except an occasional cell, the entire surface of the comb well scraped of propolis.

A No. 1.—All sections well filled except the row of cells next to the wood; combs straight; one-eighth part of comb surface soiled, or the entire surface slightly soiled the outside of the wood well scraped of propolis.

No. 1.—All sections well filled except the row of cells next to the wood; combs comparatively even; one-eighth part of comb surface soiled, or the entire surface slightly soiled.

No. 2.—Three-fourths of the total surface must be filled and sealed.

No. 3.—Must weigh at least half as much as a full-weight section.

In addition to this the honey is to be classified according to color, using the terms white, amber, and dark; that is, there will be "Fancy White," "No. 1 Dark," etc.

NEW YORK.—The honey market is quiet, with plenty of stock on hand. We quote fancy, 14@15; No. 1, white, 10@13; buckwheat, 10@12. Extracted, California, 6½@8. Beeswax, 30@31, and wanted.

FRANCIS H. LEGGETT & Co.,
May 8. Franklin and Varick Sts., New York.

CINCINNATI.—The demand for comb honey is nearly over; but, as the stock is almost exhausted, prices keep up. Fancy white brings 15@16. The demand for extracted has not changed whatever, and prices are as follows: Amber, in barrels, 5½@5½; in cans, 6@6½; white clover, 8@8½. Beeswax, 28@30.

C. H. W. WEBER,

May 8. 2146-8 Central Ave., Cincinnati, Ohio.

CHICAGO.—The past winter and present spring have been a disappointment to producers and dealers in honey, in that the consumption has been away below the average of the last decade. Choice to fancy comb is held at 15@16 per lb., with off grades 2 to 5 cts. per lb. less. Extracted white, 6@7; amber, 6@6½; dark, 5½@6. Beeswax in good demand at 32.

R. A. BURNETT & Co.,

May 7. 199 South Water St., Chicago, Ill.

PHILADELPHIA.—The reports that are coming in show a large honey yield all over the country, and buyers are slow to make any bids for the coming season. Very little doing in immediate sales, as the season is about over for the sale of comb honey, and therefore have no quotations to make. Extracted fancy white is selling at 7@8; amber, 6@7, according to quality. Beeswax is in good demand at 30. We are producers of honey, and do not handle on commission.

W.M. A. SELSER,

May 8. 10 Vine St., Philadelphia, Pa.

DETROIT.—Not much honey in the market, and no great demand. Prices rule about the same; possibly a little less. Prices are as follows: A No. 1, 15@15½; No. 1 dark, 11½@12. Beeswax, 30@32.

May 8. M. H. HUNT & SON, Bell Branch, Mich.

TOLEDO.—The supply of comb honey is nearly exhausted, but the demand fair at the following prices: fancy white comb honey, 17; A No. 1, 16; no demand for dark. Extracted white clover, 8; light amber, 7; dark amber, 6½. Beeswax, 28@30.

GRIGGS BROTHERS,

May 9. 214 Jackson Ave., Toledo, Ohio.

KANSAS CITY.—The supply of comb honey is about exhausted. The demand good. We quote as follows: fancy white comb, 24 sections, \$3.50; No. 1 white comb, 24 sections, \$3.40; No. 2 white and amber, \$3.00@\$3.25; extracted, white, per lb., 6@6½; amber, 5½. Beeswax, 25@30.

C. C. CLEMONS & Co.,

May 11. 306 Grand Ave., Kansas City, Mo.

BUFFALO.—Demand for nice white comb honey is very good for this season of the year. Prices are lower now than they were, for if prices were as high as they were a couple of months ago we would not be able to sell much. Fancy white comb, 14@14½; A No. 1, 13@14; No. 1, 12@13; No. 2, 11@12; No. 3, 10½@11 (makes a difference of about one cent if travel-stained); dark comb honey, 10@12. Extracted white, 6@7; dark, 5@5½. Beeswax, 3@32.

W. C. TOWNSEND,

May 11. 178, 180 Perry St., Buffalo, N. Y.

NEW YORK.—The market on honey is very quiet and very little doing, with more than sufficient supply on hand to meet the demand. Fancy stock of comb honey is well exhausted, while other grades are still plentiful, and selling at 13¢ for No 1; No. 2, 12; amber, 11; buckwheat, no demand. Extracted remains quiet at unchanged prices. Beeswax firm at 31.

HILDRETH & SEGELKEN,

May 8. 265-7 Greenwich St., New York City.

WANTED.—Beeswax; highest market price paid. Write for price list.

BACH, BECKER & Co., Chicago, Ill.

FOR SALE.—We are sold out on alfalfa honey, but have ten 350-lb. bbls. of light amber and buckwheat at 7¢; forty 250-300 lb. bbls. fancy basswood at 8¢; 60-lb. new cans, two in a case, 9¢. E. R. PAHL & CO., 294, 296 Broadway, Milwaukee, Wis.

WANTED—Comb and extracted honey. State price, kind, and quantity. R. A. BURNETT & Co., 199 South Water St., Chicago, Ill.

FOR SALE.—Extracted honey. Finest grades for table use. Prices quoted on application. Sample by mail, 10 cts. to pay for package and postage.

OREL H. HERSHISER,
301 Huntington Ave., Buffalo, N. Y.

We will be in the market for honey the coming season in carloads and less than carloads, and would be glad to hear from producers everywhere what they will have to offer. SEAVEY & FLARSHEIM,

1318-1324 Union Avenue, Kansas City, Mo.

Kind Words from our Customers.

Inclosed find \$4.40 for potatoes. Your seconds are so good I am sorry I did not order two barrels of that kind. M. L. DAVIS.

Smith, Mich., April 29.

GLEANINGS AS AN ADVERTISING MEDIUM.

I have sold my bees and supplies at Delhi, Ill., that I advertised in GLEANINGS for April 1. I have received almost 100 letters in regard to them, and sold the outfit before I had an opportunity of answering half the letters, and I wish to take this opportunity to let them know why I did not answer their letters.

Sapulpa, Ind. Ter., April 23. H. D. EDWARDS.

The National Bee-Keepers' Association.

Objects of The Association:

To promote and protect the interests of its members. To prevent the adulteration of honey.

Annual Membership, \$1.00.

Send dues to the Treasurer.

Officers:

W. Z. HUTCHINSON, Flint, Mich., President.

J. U. HARRIS, Grand Junction, Col., Vice-president.

GEORGE W. YORK, Chicago, Ills., Secretary.

N. E. FRANCE, Platteville, Wis., Gen. Mgr. and Treas.

Board of Directors:

E. WHITCOMB, Friend, Nebraska.

W. Z. HUTCHINSON, Flint, Michigan.

A. I. ROOT, Medina, Ohio.

R. C. AIKIN, Loveland, Colorado.

P. H. ELWOOD, Starkville, N. Y.

E. R. ROOT, Medina, Ohio.

T. G. NEWMAN, San Francisco, Cal.

G. M. DOOLITTLE, Borodino, N. Y.

W. F. MARKS, Chapinville, N. Y.

J. M. HAMBAUGH, Escondido, Cal.

C. A. HATCH, Richland Ctr., Wis.

C. C. MILLER, Marengo, Illinois.

The Best Bee-goods in the World

are no better than those we make, and the chances are that they are not so good. If you buy of us **you will not be disappointed. We are undersold by no one.** Send for our catalog and price list and free copy of THE AMERICAN BEE-KEEPER; in its thirteenth year; 50 cents a year; especially for beginners.

**The W. T. Falconer Man'f'g Co.,
Jamestown, New York.**

W. M. Gerrish, Epping, New Hampshire, carries a full line of our goods at catalog prices. Order of him and save the freight.

I. J. Stringham, New York City 105 Park Place.

OUR 1903 CATALOG is yours for the asking. The supplies listed in it are practical and up-to-date. We furnish every thing a bee-keeper uses, and will not be undersold. Silk-faced veil, 40 cts.; three for \$1.05, postpaid. Full colonies of Italian bees in hive, \$7.50; nucleus colonies, \$3.50; tested queens, \$1.00; untested, 85 cts. Apiaries, Glen Cove, Long Island.

MICHIGAN

We are Jobbers of Bee-keepers' Supplies in this State, representing

The G. B. Lewis Co., and Dadant & Son.

WHOLESALE AND RETAIL

Several carloads continuously on hand.
Send for our 40-page Illustrated Catalog

LEWIS C. & A.G. WOODMAN, Grand Rapids, Mich.

Our Bee-keeping Sisters

is a new department in the old American Bee Journal, conducted by Miss Emma Wilson, of Marengo, Ill., a sister-in-law of Dr. C. C. Miller, author of the popular "Forty Years Among the Bees." The women readers of *Gleanings* (as well as the men-folks) should have the American Bee Journal, and read what Miss Wilson has to say each week. Sample copy free, or the Bee Journal one year, and Dr. Miller's book—both for only \$1.75. Book alone, \$1.00. Address

**George W. York & Co.,
144-6 East Erie St., Chicago, Illinois.**

"Root's Goods at Root's Prices."

BEE-KEEPERS' SUPPLIES

The very best of goods. Large and complete stock. Years of experience. The best shipping-point in the United States to ship from.



HOOSIER IN- CUBATORS and BROODERS

The world can't beat them. They are the product of 9 years of manufacturing.

Send for our 1903 catalog and supplement. It tells all about these goods.

C. M. SCOTT & CO.,
1004 East Washington Street,
Indianapolis, - Indiana.

Dittmer's Foundation.

RETAIL AND WHOLESALE.

This foundation is made by a process that produces the superior of any. It is the cleanest and purest. It has the brightest color and sweetest odor. It is the most transparent, because it has the thinnest base. It is tough, clear as crystal, and gives more sheets to the pound than any other make. **Working Wax into Foundation for Cash a Specialty. Beeswax Always Wanted at Highest Price.** Catalog giving full line of supplies, with prices and samples, free on application.

Gus. Dittmer, - Augusta, Wisconsin.

We are the Largest M'rs of Bee-keepers' Supplies in the Northwest.

Send for Catalog.



Minneapolis, Minnesota

We Have the Best Goods, Lowest Prices, and Best Shipping Facilities.

**Complete Line of
Lewis' Matchless Dovetailed Hives
and Supplies at Factory Prices.**

High-class Queens: **Buckeye Strain Red-clover Queens.** They roll in the honey, while the ordinary starve. **Muth Strain Golden Italians.** None superior. **Carniolans.** None better. We guarantee safe arrival by return mail. Prices during April, May, and June:
 Untested, \$1.00 each; 6 for \$5.00. Select Untested, \$1.25 each; 6 for \$6.00.
 Tested, \$2.00 each; 6 for \$10.00. Select Tested, \$3.00 each; 6 for \$15.00.
 Best money can buy, \$5.00 each. Two-frame nuclei with Select Untested Queen, \$2.75.

Send for Catalog, and See Special Inducements.

The Fred W. Muth Co., Front and Walnut Cincinnati, O.

BEE-KEEPERS

We have on hand ready for PROMPT SHIPMENT

**The Largest Stock we ever Carried
of HIVES, SECTIONS, and all Other SUPPLIES.**

Perfect Workmanship and Finest Material.
 All parts of our Hives are made to fit Accurately.
 No trouble in setting them up.
 Our customers say it is a pleasure.
 We are not selling goods on NAME ONLY,
 But on their Quality.

G. B. LEWIS COMPANY,

Manufacturers Bee-keepers' Supplies.

Catalog Free. **Watertown, Wisconsin, U. S. A.**

HEADQUARTERS FOR
BEE-SUPPLIES

"Root's Goods at Root's Factory Prices."

Complete stock for 1908 now on hand. Freight rates from Cincinnati are the lowest. Prompt service is what I practice. Satisfaction guaranteed.

Langstroth Portico Hive and Standard Honey-jars at lowest prices.

You will save money buying from me. Catalog mailed free. Send for same.

Book orders for Golden Italian, Red-clover, and Carniolan queens For prices, refer to my catalog.

C. H. W. WEBER, : : CINCINNATI, OHIO.

Office and Salesroom, 2146-8 Central Ave. Warehouses, Freeman and Central Aves.

GREENINGS OF BEE CULTURE

A JOURNAL
DEVOTED
TO BEES,
AND HONEY,
AND HOME
INTERESTS.

ILLUSTRATED
SEMI-MONTHLY

PUBLISHED BY THE A. F. ROOT CO.
\$2.00 PER YEAR MEDINA, OHIO.

Vol. XXXI.

MAY 15, 1903.

No. 10.



IN DISCUSSING the causes of brace-combs in section-supers, it should not be forgotten that too little room may be a cause. Probably any colony may be forced to build burr and brace combs by sufficient crowding, in time of heavy flow. [You are right.—ED.]

PAPER tied around a hive, and then a close-fitting winter-case over the whole, proved a failure at Medina in wintering bees, while chaff-packed colonies beside them wintered well (p. 371). But, Mr. Editor, if I understand correctly Arthur C. Miller, his plan was not the same as yours, for he had no case outside the paper. [That is true; but the conditions were more nearly alike than perhaps appears from my footnote. This matter will be referred to in our next issue by Mr. A. C. Miller.—ED.]

GO SLOW about that raw-honey business, p. 380. So much mischief has been done by putting raw honey on the market that it is dangerous to give any encouragement for experiments in that direction. Besides, would it be feasible for the baker to use up all the honey so nearly at one time? Don't bakers use honey throughout the year? And would there be such a great gain after all over the plan of having the honey ripened in the hive? If the baker is sharp, he'll hardly want to pay full price for the water in the raw honey, to say nothing about the flavor.

THAT PLAN of melting cappings in the oven to get out the honey, p. 381, suggests a plan that I have used with satisfaction. Simply put the cappings in something to let the honey slowly drain out. "Knew that before?" Of course, you did. But you remember that, after draining a while, the honey dried on the cappings so it

wouldn't drain any more. Well, my trick was to set the cappings down cellar before beginning to drain. In fact, the extracting was done down cellar, and it makes a nice cool place for the work. Most of the honey would drain out of the cappings before it was injured by thinning, and the last of it would become very thin with the moisture of the cellar, allowing the cappings to be washed clean without diluting the honey more than was absolutely necessary. But it wouldn't work in places like Colorado, where they keep bread in the cellar.

YOU HESITATE, Mr. Editor, p. 379, as to what you're going to use to paint the insides of your bees green. You say bluing for blue; now, use bluing sparingly, so as to make light blue, and feed to yellow bees, and the combination of blue and yellow ought to make green. Indeed, unless a very dark blue be used to make them blue, I should expect a tint of green in it. [It is true, that a combination of blue and yellow makes green. If a bee is filled with yellow nectar (and nearly all nectar is on the yellow order), the transparent bands will show yellow. If it is filled with a blue nectar it will show a blue, because those bands are white—not yellow, as you suppose. The yellow bands we so much admire are yellow because of the color of the fluid back of them. I will try your experiment, however, to see whether the blue will turn green in the bees. But I should not expect it.—ED.]

MR. ALBERT GALE is a man for whom I have respect, but I wish he wouldn't use his influence in the direction of confusion of language by using such expressions as one quoted from him on p. 373, "six hives threw off thirteen colonies." Wicked as a certain Ohio editor is "along that line," I think he must gag at least a little at a *hive throwing off a colony*. [The quotation from Mr. Albert Gale was an extract from a foreign publication. We do not feel the same liberty about revising or editing extracts that we do in the case of manuscripts. Why, doctor, I had to revise *your* manuscript this very day. Indeed, you "gagged" me very much by telling about using

"starters in place of full sheets in brood-comb" (italics mine). Of course, I changed it to "frames," as you will see in the Straw. Say, doctor, I wish you could be an editor just long enough so I could "get it back" at you. I promise you I would make your life miserable after the two first issues of your paper had appeared.—ED.]

I'M AFRAID some beginner may be advised in the wrong direction by what Geo. W. Strangways says, p. 387. He made a few trials with full sheets of foundation, and the combs warped, and some of it was converted into drone comb. But hundreds of us have made many trials on a large scale without any failure, which rather goes to show that Mr. Strangways failed to fasten his wires into the foundation, or made some other mistake not usually made. I have more than 2000 combs built upon full sheets of foundation, and I don't think you can find a warped one in the lot. Neither will you find a square inch of drone comb in the whole lot which the bees have built upon worker foundation, although you'll find a good bit of drone comb where by some means a hole has been made in a comb, to be filled in at the will of the bees. It would be a very unusual thing to see the drone-cells built upon worker foundation that was straight. If it should be warped or curved, I should expect drone-cells on the convex side. But there's no need to have it warped or curved. [We have thousands of beautiful combs built off from full sheets of foundation, and it would be hard to find a single cell of drone comb except near the top-bar. Carelessness in putting in the wires, or attaching foundation to the wires, may result in the stretching of the foundation, making the cells large enough to rear drones. Yes, perhaps the beginner should go slow.—ED.]

IN A STRAW, p. 372, I said there must be a mistake about formaldehyde curing foul brood without destroying healthy brood, and in a footnote you say, "No mistake," Mr. Editor, and then later on you say, "But it may be that I am wrong in assuming that healthy sealed brood will not be killed." This leaves it a little uncertain just where you do stand. Whether the healthy brood be killed or not is a matter of thousands of dollars' difference, and it would be foolish to raise false hopes. I can not conceive the possibility of any drug sufficiently energetic to go to the bottom of a cell of sealed honey and kill a foul-brood spore there, and yet leave uninjured a cell of brood in any stage. [I was first under the impression that only a spray and not a gas was used to disinfect the combs. With that impression I reasoned that the drug could thus be injected into the perforated cappings of foul brood, while the healthy brood with cappings intact would not be molested. But now that we know positively that a gas of a decidedly penetrating character is used, there can be no question that healthy as well as diseased brood will

be killed. But, see here, doctor; we can save even the brood by letting it all hatch out that is healthy, then subsequently disinfect the combs with gas. Of course, we could do that with the McEvoy treatment; but the McEvoy method involves the destruction of the combs, either by melting or burning up—can't get around it. If the formaldehyde-gas treatment can be made effective, we really do not need to destroy anything. The same combs and same hives can be used over and over again. I do not feel as sanguine as some do, that formaldehyde is going to do all that is claimed for it; but so much has been said in its favor that it deserves careful consideration on the part of practical bee-keepers and all the bee-papers.—ED.]

YOU SAY you're going to take A. I. R. on your first auto trip. Don't you do it unless he consents to have his hands tied; for just as sure as you get up a good speed he'll want to go three times as fast, and then he'll grab the thing out of your hands and get to going at such a rate that he'll run you into the Atlantic Ocean. [At first A. I. R. was skeptical. He thought the automobile was a "naughty mobile;" that it would break down; would stop, and would not run. Well, that is the way my machine did until I learned more about handling it; and now that I am able to make it go when I want it to go, father is pleased—very much so—over it. He asks questions, and actually gets down on his hands and knees, and squints under the machine. He now begins to wonder if he could not run it. Well, I am going to give him a chance. We are at present visiting our out-yards with the auto. After my experience with horses stung and killed around the bees it is a real comfort to run my iron horse clear up among the bees without the least fear of the bees stinging it. Sometimes even now when I run up close to a trolley-car or a common steam-car I forget myself and wonder if something will not happen—not that I shall get run into, but that my horse may get scared. Then the feeling (a very comfortable one I can tell you) comes to me that my steed will not scare. I tell you, the coming way of handling out-apiaries will be with the automobile; and I most firmly believe that Rambler's joke of two years ago, of doing our extracting with the same engine that runs the auto to the out-yard will be realized before we know it; and I should not be surprised if some enterprising chap would use his machine for making bee-hives, brood-frames, etc. Yes, I hope to see the day myself when a self-propelled road-scraper will level off our horrible clay roads at a third of the cost the work is now performed for with horses.—ED.]

GO SLOW about advocating setting hives on stakes, p. 392, on the ground that one "can shove his toes under, permitting him to get closer to the hive," until you've given it a thorough practical trial. I've just been

out to try it, and I think you can not sit and work comfortably with your toes further out than your knees. For standing work it would be all right; but it would be bad for clipped queens trying to make their way back to the hive; also for workers falling down with heavy loads. [The illustration on page 392 should have been modified, perhaps, just enough to obviate the objections you point out. In the first place, I would have the four stakes driven down into the ground a little further, so that the hive would not stand more than four inches above the general level. Then I would have a rough board of inch lumber, perhaps 10 inches wide, run up against the end of the bottom-board so as to give the bees an inclined runway clear up to the entrance. When bees come in heavily laden from the field, many of them are so exhausted that they drop on the ground. After rising they will take wing if they can not crawl up into the hive. Some of them may never take wing, but crawl, vainly trying to get into the hive. But it is in early spring that bees are lost unless there is an inclined runway from the ground up to the entrance. Hives with easy ingress will be much less subject to spring dwindling; and I do not know of any thing that means more money to the bee-keeper than good runways from the ground to the bottom-board in early spring. If we modify the principles of the stake slightly we still secure the advantages of cheapness as well as close proximity of working distance, and yet eliminate the objections you have mentioned. If a young queen is crawling around on the ground I would much rather have her crawl under a hive supported by stakes than to have her run under a hive supported by a rim that fits close to the ground, making it necessary to lift the whole hive off the stand to find her.—ED.]

I COMMEND your desire, Mr. Editor, not to be biased in your judgment by self-interest; but your views on p. 388 remind me of the reply of the carpenter's apprentice. He was using a plumb-line up on a building, and the boss called up to him, "Is it plumb?" Promptly came back the reply, "Yes, it's plumb, and a leetle more." I think you're a leetle more than plumb in your views when you say, "One can manage to have all worker-combs built from starters, and thus save considerable expense in the way of foundation." It is possible some may make money by using starters in place of full sheets in brood-frames, but I believe the average bee-keeper will lose by it. I am sure I "can manage" to have all-worker combs built upon starters; but the managing will cost more in time and trouble than the full sheets of foundation would cost. Let the beginner use full sheets until he has found out by experimenting on a small scale that he is one of the few who can afford to use starters only. [The members of our company have before now complained that I was a little "too plumb." It would be a natural thing for the publish-

er of a bee-journal to allow a certain amount of bias in the interest of his business to creep into his columns. Realizing that nothing would so weaken a journal as a policy of this kind, I have perhaps erred in going to the other extreme—that of accepting and indorsing matter which in its ultimate tendency is against the interest of the manufacturer, and that means myself with the other members of our company. This question of starters versus full sheets in the brood-nest is a very important one. I suspect it is true that the average beginner would make more money, perhaps, with full sheets than starters; but we were talking about some veterans, who make four ounces of foundation answer the purpose of a full pound. If there are some men who can do it profitably, I am perfectly willing that the method for accomplishing the feat shall be fairly exploited in these columns.—ED.]



Reports, foreign as well as domestic, indicate that formaldehyde is the coming (if not arrived) specific for foul brood. It is well worthy of a very fair and thorough trial.

Vague rumors of the production of beeswax directly from honey are reaching us from foreign shores. Probably it will be best to depend on the bees for some time yet. Isn't there some way by which bees can be managed to work for wax in quantities more than they need, just as they do for honey?

AMERICAN BEE JOURNAL.

The many friends of Thomas W. Cowan will be glad to read the following:

Mr. Thomas W. Cowan made us a very pleasant call on April 29, when on his way through Chicago to England from his home in California. He seemed to be in splendid health, and looked forward with pleasure to a year and a half of travel. He has a very pleasant home at Pacific Grove, Cal., and when leaving recently the people of the town gave himself and Mrs. Cowan a farewell reception which included practically everybody that could go there. They evidently have endeared themselves to the people of that locality by their many deeds of kindness and genuine worth.

Mr. Cowan has practically retired from active work and business, and is able to devote himself to pursuits which yield no financial returns. We trust that Mr. and Mrs. Cowan will have a pleasant and safe journey, and return to their California home much honored by their trip.

While we know a good deal about Dr. Miller the bee-keeper, the following of a personal character will be read with interest by his many friends:

Dr. C. C. Miller, whom all bee-keepers respect so highly, and many of whom know so well, called on us when in Chicago last week. With the exception of a cough which has bothered him for a few weeks, he is in excellent health, and is able to do considerable work among the bees as well as much writing. He is one of the few old-line bee-keepers, and rightly merits the title of "Father Miller." While there may be many Dr. Millers in the world, there is but one Dr. Miller known well to bee-keepers. Not only those who have a personal acquaintance with him, but all who have read his helpful writings on the subject of bees, hope that he may live yet many years to bless the world with his cheerful presence and excellent aparian advice.

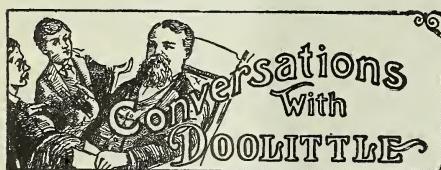
While visiting at a friend's lately I was playing at random a fine passage from an organ-book. At the close I was pleased to notice that it was written by our old friend Dr. Miller, whose name as a music-writer was familiar to me before I ever heard of him as a bee-keeper.

W

MODERN FARMER.

Mr. Abbott uses no gloves when handling sharpers; and in speaking of things that are doubtful his advice is good. The following sounds like excellent counsel:

Do not get the ginseng fever. If all reports are true, there has been more money squandered in this business now in this country than any one is ever apt to make out of it. The circular of a company that has seeds and roots to sell says that, by the investment of \$100, \$50,000 can be made in ten years. One is led to wonder why these fellows have not gone out of the business long ago, with more money than they know what to do with. They asked us for advertising rates in the *Modern Farmer*. It is needless to say that we did not quote them any rates.



GETTING WORKER COMB BUILT.

"Say, Doolittle, I came over to see you about having comb built so that it will be worker comb. It is like this: I have quite a quantity of combs left over from last year, which you know was a poor season, which are only partly built to fill the frames, and I wish the bees to complete them this summer, so that there will be as little drone comb in them as possible. How can this be done?"

"Well, friend Smith, it can be done in only one way that I know of, and that is by keeping the bees so that they desire *only* worker brood. When in this condition they will always build worker comb."

"Will you tell me so I can understand just how this is to be done?"

"When any colony is so weak that it has no desire to swarm, during or preceding the swarming season or honey-flow, such a colony will invariably build worker comb (so that worker brood may be reared until the colony comes into a prosperous condi-

tion), providing they do not have sufficient comb already built. Taking advantage of this fact I use all colonies which are too weak to store honey to advantage at the beginning of the honey-flow, treating them thus: Their combs are generally all taken away from them; but sometimes I leave one comb partly filled with brood, and always one of honey, giving the combs of brood to other colonies so that they will be still stronger for the honey harvest."

"What do you do with the combs which are taken away that may not happen to have brood in them?"

"These are stored away to hive new swarms on, if they are perfect worker combs; if not, then they are treated the same as I am about to tell you how to treat those only partly filled, after you have cut the drone comb out."

"Excuse my interrupting you. You see I wanted to know all about the matter."

"When the colony is fixed with its frame of honey, or this frame of honey and one having some brood in it, I next put in one, two, and sometimes three frames with starters in them, just in accord with the size of the colony after I have taken their combs away."

"But that wasn't what I wanted to know. I do not want to have full combs built, but frames partly filled, finished out with worker comb. However, I am glad you touched on this matter, for now I know how to get full combs built, should I wish to do this instead of purchasing foundation."

"I said what I did as a preparing of the way for the other, for the method is the same with the one as with the other; only where frames partly filled with comb are to be built out, the comb of brood is not left in the hive."

"Why don't you leave it now as well as with the building of full frames?"

"Because, where the bees are to fill the frame with comb from the starter, there will be no place for the queen to lay till they build the cells, only as she so lays in the remaining cells in the comb only partially filled with brood; and as she had all the room she needed before the combs were taken away from her colony, this sudden stopping of her laying would be an injury to her. But where partly filled frames are given she will have all the room she needs after the brood is taken, as well as before."

"I see the point now. Is the frame of honey as necessary with these partly filled frames as before?"

"Yes. In all cases I see that each of these colonies thus building comb has a frame well filled with honey; for should storms or cloudy windy weather come on at this time they would build no comb of any amount, and might starve; while with the frame of honey they will go right on converting that honey into comb, storm or no storm."

"How soon will they fill out the frames with comb?"

"If the right number of frames is given

to suit the size of the little colony they will fill them very quickly, especially when honey is coming in from the fields, and each comb will be filled with brood as fast as built."

"How long will they continue to build all worker comb?"

"If not too strong they will generally build comb of the worker size of cell until the bees begin to emerge from the eggs first laid in the newly built combs by the queen; but as soon as many bees emerge they will change to the drone size of cells; or if the little colony is quite strong in bees they may change the size of cells sooner than this."

"How do you tell about this?"

"As soon as the first frames given them are filled with comb I look to see how many bees they have; and if they are still well stocked with bees, or in a shape where I may expect that they may change the size of cell before they reach the bottoms of the frames, should I spread those apart which they already have and insert other empty or partly filled frames, I take out the combs they already have built, and thus put them in the same condition they were in when I started."

"Will they still work just as well?"

"No, not quite. They will not build combs quite as freely this time as they did before, unless there can be some young bees emerging; so, if I can conveniently, I give them a comb containing mostly honey and a little brood (if they have such a comb it is left with them, which is more often the case than otherwise) from some other colony, when they are ready to work the same as before. In this way a colony can be kept building worker comb all summer, or till the bees are nearly used up from old age, the colony becoming so small as to be unable to build comb to any advantage under any circumstances. But if just the right amount of brood is left, or given them, so they stay in about the same condition, they will build worker comb all summer by the apistar supplying honey or feed when none is coming from the fields."

"But suppose you do not find them very strong on your examination — what then?"

"If not so strong but that I think they will still continue to build worker comb, instead of taking the brood away I spread the frames of comb (now built) apart and insert one or more frames between them, when these will generally be filled with worker comb before enough young bees emerge for them to change the size of cell."

"I think I understand now, and so will be going."

"Hold on a minute. Don't be in too big a hurry."

"Why? What is the trouble?"

"There is one thing I do not think you take into consideration as fully as you should."

"What is that?"

"You should always keep this in mind, whenever you find these colonies building

drone comb: The combs they then have, all except the one mostly filled with honey, are to be taken away so that they may feel their need of worker brood again, when they will build cells of the worker size the same as they did on the start."

"Thank you for this part. I should hardly have known what to do when they commenced to build drone comb had you not stopped me to tell me this. And now, in parting, how many combs have you ever had built in this way?"

"I have had hundreds of frames built full of worker comb in this way; hundreds completed as you, are proposing to do, and hundreds and thousands 'patched,' where I had cut out small pieces of drone comb which had gotten in in one way or another. If you ever have a mutilated comb you wish to have fixed so it will be a surprise to you, just give it to one of these little prepared colonies, and see what nice work they can do at 'patching' with *all* worker comb. This last is an item the bee world does not seem to take in fully, and it is something which gives me the most pleasure of the whole, especially where, through mice in winter, or otherwise, comb has been destroyed in spots where said comb was in wired frames."



COLORADO ANTI-HONEY-ADULTERATION LAW.

COLORADO has now a pure-food law which was secured through the influence and prestige of the Colorado State Bee-keepers' Association. This law provides that no person shall sell any adulterated or imitation honey or beeswax unless properly labeled with the percentage. Any violation of this law will mean confiscation of the goods, and a fine of from \$25 to \$500 on the offender. There is no doubt that the Colorado Association will see that the law is enforced. It has money, men, and power back of it. Score another point in favor of organization.

I happen to know, from private sources that can not be questioned, that adulteration, in spite of a good law against it, is flagrantly and openly carried on in San Francisco; but "any thing goes in that town," for it is a wide-open place. Gambling, drinking-places, houses of ill-fame—every thing goes there without let or hindrance. A large amount of honey is adulterated in California, and the new California organization will do a great work if it can enforce the pure-food law, which is stringent enough if men can be found who

will enforce it. Adulterated California honey is being sent East with the result that California extracted is getting a bad name in some markets. I hope to put the facts in my possession before the National Association if I can get the consent of the parties who have given me the information.

SQUARE OR TALL SECTIONS.

We have several times advised our readers that it would be money in their pockets to have their honey put up in tall sections—at least for some of the Eastern markets. There are some local markets in the East, and a good many perhaps in the West, where this is an exception of course. Here is a private letter which was written with no idea of anybody seeing it but us, from perhaps the largest honey-buyers or honey-handlers in the city of New York—Hildreth & Segelken. The extract from the letter speaks for itself:

We note one lot of square sections from Mr. _____ with the wooden side and isinglassed front. He is making a mistake in putting up his honey in this shape, and we wrote him so long ago. Besides, he has his name stamped on every comb. *You ought to impress upon him the fact that he should drop the square section and all its attachments, and put his honey up, another season in the 4x5 section or the 3½x5, whichever he chooses, as either one finds ready sale than the square section, especially the way he puts them up.*

HILDRETH & SEGELKEN.

New York, April 30.

We buy large quantities of comb honey every season; and the simple fact is, that tall sections always move off faster than square ones. The question as to the style of sections is not a matter of opinion or preference or notion. We have "a condition, not a theory," to deal with. Many bee-keepers in the East, notably Hetherington and Doolittle, have been producing honey in these tall sections for some twenty years back, and they know a good thing when they see it—likewise the buyers to whom they sell. Honey in 4x5 sections in our locality goes off better than honey in 3½x5 sections. The former is a little better proportioned, has a thinner comb and a larger surface.

THE PROBLEM OF SUITABLE LUMBER FOR SECTIONS.

TIMBER suitable for making sections is getting to be more and more scarce. Formerly basswood was used by the furniture and box makers; but now it is being used by the planing-mills for making doors and door-frames, window-casings, and general house-furnishing. The scarcity of pine has made a heavy demand for basswood, and it will not be many years before many bee-keepers will have to begin to think of some other wood for sections; and yet there is nothing else that fills the bill, for one-piece sections at least.

One difficulty now is that bee-keepers are demanding so called snow-white sections for honey. Wood slightly on the cream order is just as good, and even better, because it helps to show off the honey by contrast. The idea that white basswood is tougher

and stronger than good cream lumber, is an error. The time will come, is bound to come, when bee-keepers will be glad to get even cream sections, and at a great advance in price.

The fearful slaughter that is now being made in our forests, and which has been made without any effort to replace these valuable timbers, is going to put hardships on future generations. There are vast areas in Maine and Michigan where the land is good for nothing but to grow pine-trees; and yet no effort has been made by the State or national government to set out young trees to supply the wants of future generations. If we could grow pine and basswood as we can wheat and corn, the problem would be very simple.

Since writing the foregoing, the following has come to hand, and will explain itself:

I agree with you on this white-section business being a fad. We use only No. 2 sections, and have done so for years, getting premiums on honey at our State fair the same as those that use the No. 1. There is absolutely no difference when the honey is put on the market, so far as dollars and cents are concerned. Commission men sell our honey for as much as any honey put in No. 1 sections. Customers never look at the section. Sometimes I think the cream color is preferable to the white, showing the white honey to better advantage, making or giving more of a contrast.

H. G. ACKLIN.

St. Paul, Minn., May 9.

CLIPPING QUEENS' WINGS—HOW TO DO IT.

To the veteran it may not be necessary to give any special instructions. But even some of these may be surprised to see that some other veteran's way of doing it is better than their own. The problem of clipping, to the beginner, especially if he has never accomplished the feat, seems very difficult; and for his benefit especially I show the method that I ordinarily employ.

After finding the queen on the comb I smoke the bees just enough to make them stick their heads in the cells. This gets many of them out of the way. Then I reach for the queen. It must be one quick grab. To chase after her with the fingers, occasionally touching the wings, makes her nervous as well as yourself; and the result is, she will start on a run, and then you may as well give up the job if you do not wish to run the risk of maiming her. At another time, when she stands in the center, several bees caressing her, make one grasp for the wings with the right hand, just between the abdomen and the thorax. Do not be afraid of crushing the wings; but be careful to avoid pinching or punching the queen on to the comb, and especially squeezing her soft abdomen.* If you catch her right she will be as shown in Fig. 1. She will bend the abdomen over, and reach with her hind legs around behind in the effort, just as shown, to push the fingers away. With the left hand, catch hold of her between the thumb and fore finger in such a

*The beginner should first practice on drones, then on worker bees. After acquiring the knack he can venture on a queen.

way that the finger will be on top and the thumb beneath, see Fig. 3. If you grab her by the waist you need not be afraid of hurting her, for this portion of her anatomy will stand considerable pressure without injury. With the right hand take a pair of scissors and clip one wing at about the point shown in the illustration, Fig. 3; but do not clip both wings as there shown. In putting the queen back on the comb, be very careful not to let her drop. Let her down gently on the comb, or raise the fore finger and let her crawl from the thumb on to the comb.

I have seen some veterans who preferred to grab hold of the queen as shown in Fig. 2. She is first picked up as shown in 1, then she is caught by the legs as shown in 2. While a *veteran* can hold a queen in this way, the average beginner would be liable to squeeze too hard and pull her legs off; then if you grab one leg only, the queen will revolve round and round till she twists it off, and in all probability take wing. The plan shown in 1 and 3 is the safer to employ.

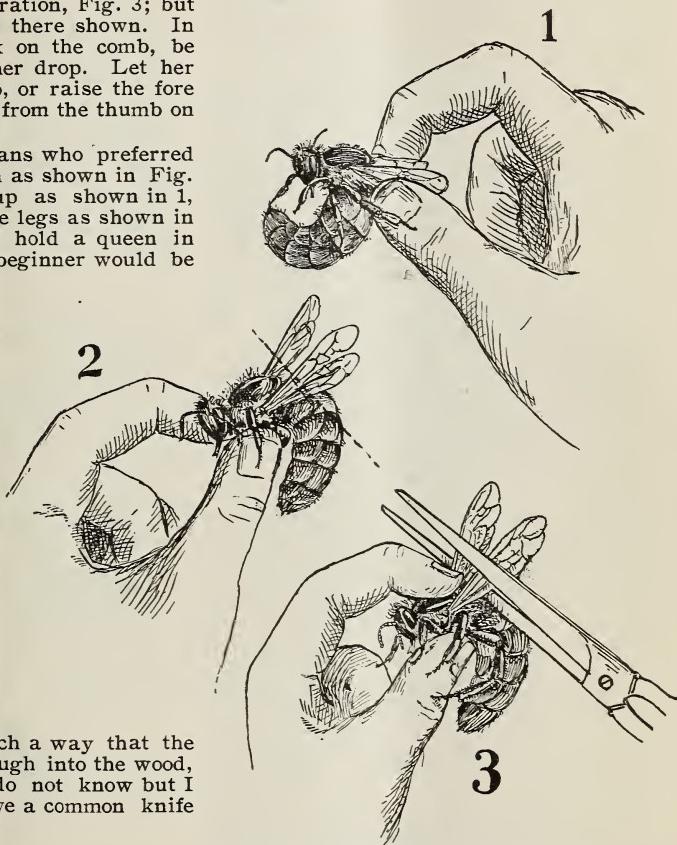
There will be times when one does not have handy a pair of scissors. Very well, he is to pick the queen up as shown in 1; then hold her with the left hand as illustrated in 3. Now with the knife in the right hand, place one of the queen's wings on the corner of a hive-body or hive-cover in such a way that the knife-blade will cut through into the wood, severing the wing. I do not know but I would about as soon have a common knife if it is sharp as scissors.

PRICE OF HONEY TOO LOW.

It is a well-known fact that, during the last few years, the prices of labor, of manufactured articles, and of the general food-stuffs, have advanced materially. Honey has advanced, *but not in proportion*. If this is true, the bee-keeper of to-day must work on a smaller margin than he did a few years ago, when prices on his product were actually lower than now.

The A. I. Root Co. would gladly pay a higher price for honey; but we would not dare to offer more than the general market will allow, because we can not afford to pay 25 per cent more than our competitors would pay for the same grade of honey. The trouble is with the producer, after all. So long as there are producers willing to sell at any old price, just so long bee-keepers will work against each other. The readers of bee-journals would be willing to cooperate. But here is a producer who can't

afford to take a bee-paper; or if he does he can not take time to study the markets and keep abreast with the times. His 20,000 or 30,000 lbs. of honey, sold at two or three cents less than the general market, will be quite sure to depress it to the selling price of this particular lot of honey.



If we can get bee-keepers organized in the several States and in different localities, as they are in Colorado, New York, California, and in several isolated districts, we may be able to get control of the bulk of the honey. When the cheap lots are all disposed of, then there might be a chance to advance.

I am well aware that the task seems almost hopeless; but if we give it up as a bad job we shall never accomplish any thing.

A KINK WORTH KNOWING ; COGGSHALL ON ENTRANCE-CLOSING TO SAVE THE BROOD.

On the 2d of May, Mr. W. L. Coggshall, of Groton, N. Y., wrote that it had been very cold in his locality; that ice at that time was $1\frac{1}{4}$ inches thick; bees weak, and but little brood. He had been driving 30 miles from 7 A. M. to 7 P. M., closing the entrances of the hives. He carried along a

pailful of sawdust, and threw a handful at each entrance, and in that way closed or contracted the entrances of 600 colonies scattered in I do not know how many out-yards—perhaps eight or ten. When warmer weather comes, the bees will push this sawdust away themselves; and in the mean time, while it remains cool, the closing or contracting of the entrances will confine the heat on the cluster, putting the bees in better condition to resist the cold.

This is a good point, and I am sure it must have saved Mr. Coggshall a great amount of brood, many bees, and possibly earned for him a good many tons of honey.

That leads me to say that, during very cold weather, I believe it would be good policy to close the hives of outdoor-wintered colonies in the same way. If there should come on a warm spell the bees could very easily remove the obstruction. When it is very cold they do not need much ventilation; but when it is warm, they can of their own will enlarge the entrance to suit their own requirements.

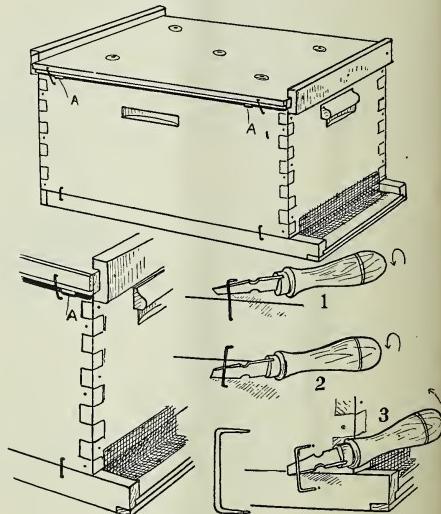
Beginners as well as some of the veterans had better paste this kink (from one of the most extensive bee-keepers in the world—perhaps the most so) in their hats, against the cold of next winter or spring. Mr. Coggshall has apiaries in Cuba, New York, Colorado, and Arizona. The number of colonies he owns runs up to something over 3000. Most of the men who work for him have acquired the name of "lightning operators." One of them is Harry Howe, now of Cuba. I saw one of his operators (not Mr. Howe) shake the bees off from something like 50 colonies during extracting time. It was on this occasion that Mr. Coggshall himself went through the "lightning act," and also exhibited that "professional kick" by which he removed or loosened the supers from the top of the brood-nests. Things were "lightning" there that day, let me tell you. I was almost glad when I got out of the yard; for the bees were just beginning to push their lightning stings clear through my clothing.

A CHEAP AND SIMPLE METHOD OF FASTENING BOTTOM-BOARDS AND COVERS FOR MOVING BEES TO OUTYARDS.

THERE are many of the veteran bee-keepers who do not even yet know of a cheap and simple method of fastening their bottom-boards to the hive-bodies. We have been using for years double-pointed tacks, or crate-staples, as they are sometimes called, and I supposed that every one knew of the trick. But in my travels over the country among bee-keepers I find a good many are still using ropes, and others are nailing through the covers into the bodies. When the bottom-boards are nailed from the under side up into the hive-body with an ordinary wire nail it is not an easy matter to separate the two parts when one desires to use an extra hive-body without the bottom, and it is harder still to drive the nails in if the

bees are in. But four crate-staples, sometimes three, will make a very secure and reliable fastening, and yet one which can be easily broken with a common screwdriver, and whether bees are in the hives or not the staples can be driven in very easily. Two staples driven on each side, so as to span the crack between the bottom-board and body, will hold the two together very firmly. Or two staples in front and one in the rear or in the back end do very well. The cover may be secured in the same way.

But now let me tell you of a little trick we stumbled on to last summer, which will save dollars in time and wire cloth and wire screens. Instead of using an ordinary wire-cloth screen, take some pieces of one-piece section, $\frac{1}{8}$ -inch thick, and lay one piece at each of the four corners, on top of the hive-body. The cover is now set on top; and, as will be seen, there will be a $\frac{1}{8}$ -inch crack



on the sides, front, and rear, between the cover and the body, and just narrow enough to exclude bees. The knee is now placed on the cover, when a crate-staple is driven in, spanning the body and cover just opposite or near one of these section pieces—see A A in the illustration, also the enlarged view in the lower left-hand corner. With wire cloth nailed over the entrance, and the cover secured $\frac{1}{8}$ -inch above the hive-bodies, we get sufficient ventilation, even on hot days, if the bees are not to be moved more than about two or three miles. But I would not move during the heat of the day. Let it be in the morning or evening.

Now, then, on arriving at the outyard one can very easily draw the staples, that secure the cover or bottom-board, with a common screwdriver. I would use, however, one larger and stronger than the one shown in the cut—one that will stand a good deal of twisting and prying. Push the point of the blade under the staple, near one of the

legs. Give the screwdriver a twist. This will start one leg of the staple. Slip the screwdriver along to the other side, and give it a twist in the opposite direction. This will start the other leg. Slide the screwdriver back and forth a couple of times, giving it a twist each time when the staple will be removed.

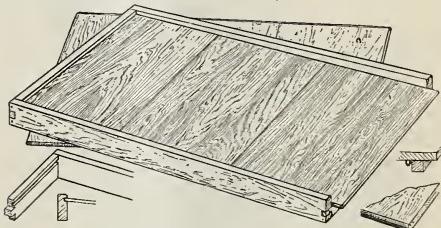
The crate-staple we use is $1\frac{1}{2}$ inches wide, having legs or points $\frac{3}{4}$ inch long. They can be obtained of any of your supply dealers, I think, at 15 cents per lb., or you can get them at the hardware store perhaps. A pound will be enough for a whole outfit of about 100 colonies. These staples, besides the convenience they afford in moving bees, are useful in mending splits or bad checks in hives. Indeed, we consider them almost indispensable in any bee-yard.

GENERAL MANAGER FRANCE AND WHAT HE IS DOING.

GENERAL MANAGER N. E. FRANCE is doing some hard work. He has before him now eight cases of bees under consideration. Two of these are for damages; two for poisoning by spraying fruit trees, and two of honey adulteration. He now has, or did have on May 5th, 1202 names, nearly all of which are paid up. He has distributed 1500 copies of Bees and Horticulture, and has ordered 1000 more. Mr. France, if we may judge by the work he is doing, will earn his salary and more too. The Association is to be congratulated on having such an excellent man for the position. While he is not saying very much he is keeping still and sawing wood. The membership should stand by him, and help him in every way possible. Our recent unpleasantness does not seem to interfere very much with the flourishing condition of the Association. This is as it should be.

Mr. France has always been known as a hard worker and a successful business man. He is carrying these characteristics right into the Association work, and of course that presages success.

bottom-board frame, in some localities, especially if no allowance were made for the swelling of the boards. We now make the floors with the boards running crosswise, and bind them together with galvanized V-shaped channel irons. The ends of the channels fit into corresponding saw-kerfs cut in the ends of the boards. One long iron on each side holds the boards together, and makes a nice smooth anti-friction edge to slide up and down against the side rails of the bottom-board frame. Thus constructed, shrinking and swelling can not in the least affect the movement up and down of the tilting floor-board for the purpose of increasing or decreasing the depth of the entrance, because boards do not swell lengthwise. The three boards are tongued and grooved together, so that the cracks will always be bee-tight.



In the lower left-hand corner will be seen how the floor-board is let into a groove cut in the back cleat of the frame. This groove makes a fulcrum or hinge for the board. On the right of the illustration will be seen a staple driven on the under side of the floor-board. When this is drawn forward slightly, the staple will rest on the end rail, reducing the depth of the entrance just in proportion as the staple sticks above (or below, rather) the floor-board. By raising the floor-board, and drawing it forward slightly, the entrance can be contracted down to about $\frac{1}{4}$ inch deep. When warm weather comes on, and the honey-flow is gone, a slight pressure against the floor-board will cause it to enter into the groove at the rear, and allow the staple at the same time to slip past the rail, giving full $\frac{1}{8}$ -inch depth to the entrance.

HOW TO USE OR HANDLE A BEE-SMOKER; THE RIGHT AND WRONG WAY.

Within the last five or six years most of the modern hot-blast smokers have been made in such a way that, while in use, the barrel will stand perpendicularly, leaving the coals of fire or hot embers to lie on the grate while the fumes free from sparks or embers are blown out through a curved or deflecting snout. The position of the bellows likewise during the interim mentioned has been reversed, putting the large end at the top instead of at the bottom, as heretofore.

I have been surprised many and many a time to see how awkwardly bee-keepers handle the modern smoker. To my notion

TRADE NOTES BY E. R. ROOT.

THE NEW DANZENBAKER BOTTOM-BOARD IMPROVED.

Very recently we have made a slight change in the Danzenbaker bottom-boards which entirely overcomes the only objection that was ever raised against them. It will be remembered that this hive-bottom has a floor that is pivoted at the back so that it can be raised or lowered in front, closing the entrance up entirely or opening it to its full width. The floor-boards as we first made them had the grain of the wood running lengthwise. So made, they would shrink or swell, making them bind in the

there is only one way, and that is shown in the accompanying illustration. The thumb should be on the side of the bellows next to the stove. This lets the hand hang in the natural position without any twist at the wrist. To handle the smoker, proceed as follows:

Stand in front of the hive, with the entrance at the left and the smoker in the right hand as shown in the illustration.



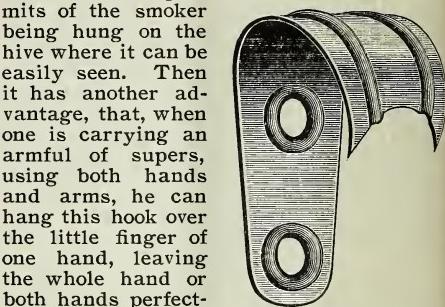
With the left, pry the cover loose, then with the other holding the smoker in a perpendicular position, or only slightly tilted, perhaps, blow a little smoke over the tops of the frames. After the cover is removed, and the bees have been sufficiently quieted, set the smoker down close to the back end (not the front) of the hive and on the ground. In doing this, the position of the wrist and hand does not have to be changed. Now, then, if the bees begin to act obstreperously, all one has to do is to reach down, grab the smoker in the most easy and natural way, as shown in the illustration, and blow the smoke over the frames without twisting the wrist or the hand in an awkward angular kink.

If one gets to using an implement wrong-ly, he will waste seconds, minutes, and hours of time as the weeks and months roll by. Every movement should be calculated to get the maximum results with the minimum of time and actual muscular force expended.

I have seen bee-keepers pick up the smok-er in the left hand, hold it in an awkward way which I can hardly describe, and then when they were through lay the smoker down in front of the entrance, right in the height of the honey-flow. Or perhaps they will lay it on its side behind the hive; then when they want it for an emergency it can not be found.

There are many bee-keepers who have a fashion of losing their smokers. Perhaps the weeds are so deep around the hives that, when the smoker is set down on the ground, it can not be seen. To accommodate all such we have a very convenient hook which is attached to the rear of our smoker-bellows, see cut. This permits of the smoker being hung on the hive where it can be easily seen. Then it has another ad-vantage, that, when one is carrying an armful of supers, using both hands and arms, he can hang this hook over the little finger of one hand, leaving the whole hand or both hands perfectly free to hold the armful of stuff while he walks to the other part of the yard.

These are simple little things; but the man, as I have already suggested, who can save the minutes can save the hours and the days. When labor is high-priced, and can not be had, one's own time should be econ-omized in every way possible. Why, I have seen bee-keepers grab an armful of supers, take them some distance from the point where they were working, and then go back and get the smoker. May be they forget all about the pry and screwdriver for loos-enning the frames or covers, and have to make another trip.



EIGHT-FRAME JUMBO HIVES.

Apple-blossom Honey—the Quality and Quantity.

BY J. A. CRANE.

Some time ago the question appeared in GLEANINGS, why a hive, L. length, and holding eight frames the same depth as the "Draper barns," would not be a good thing. Now, that is just the hive for me. I have used them exclusively for ten years, and never lost a colony in one of them, and will show my record of honey-yield with any one in this section. They are no new thing here, nor original with me, having been used by bee-keepers in this town for over twenty years. They take regular eight-frame supers for sections, and with

half-depth supers and frames they make an ideal extracting-hive. I believe the editor himself has, or did have, a leaning toward a deeper frame than the standard L.

I build my own hives; but these hives are made and kept in stock here in town; and more than 90 per cent of the bees in this section are kept in them. I believe the bees winter better, and build up earlier in spring, than in shallower hives, which with me is a vital matter, as it gets me in shape for the first (and sometimes the main) hon-ey-flow here—that from apple-blossoms.

Doolittle once said that, if we could have the same conditions in the hive during apple-bloom that we have during basswood, he thought we could get nearly as much honey as from basswood. Now, there is a great deal of basswood here; but the crop is very uncertain—three good yields in ten years, and only twice in that time did we know it would fail before we found it out by experience. Those causes were late frosts.

This county (Wayne) stands fourth in the United States as an apple county, and we can "know it last fall" whether the orchards will blossom or not this year; and also that, if the weather is favorable, and our bees in shape, we shall get honey.

In 1901 I extracted from three hives (supers and brood-nest) three times in ten days, taking from each, at each extracting, a twelve-quart bucketful of honey. Ripe? Yes, it weighed 12 lbs. 3 oz. per gallon. It candied solid the next January, and was pure white—nearly 100 lbs. per colony. My whole yard averaged over 50 lbs. per colony. Now, don't think I mean to say that such a crop can be secured *every* year; but I have had four yields of apple-blossom honey to three of basswood, so I think it well worth working for, seeing that you need prepare for it only when the trees are going to blossom full.

Now about the quality. I retail all or nearly all of my honey; and when a customer has once had apple-blossom honey he will always call for it again, although I have several other kinds—raspberry, clover, basswood, and generally buckwheat; and last year, for the first time, I had some catnip. It being a very wet season, the stuff grew quite rank, and farmers were too busy, when it did not rain, to cut it; consequently the bees made a drive on it, wet or dry, rain or shine. Wherever there was a bunch of catnip it would be covered with bees from morning till night. Well, just before buckwheat came I extracted the crop, and—whew! I have it yet. I don't want any more. I can't sell it, can't eat it, wouldn't give it away—going to make bees of it. If all catnip is like this, every pound of it sold on the market will spoil the sale of five pounds of good honey. I am strongly of the opinion that, if all low-grade honey were kept at home, the money realized from what is sold would be more than is now received from the whole.

Speaking of new ideas, in GLEANINGS

for April 1, an old bee-keeper of more than fifty years' experience recently told me that comb honey treated with bisulphide of carbon could be eaten with impunity by persons who could not otherwise eat honey at all. He cited some cases that came under his observation the past year. If this is the case it would seem that the use of the drug does not injure honey in any way, as has been argued in the papers more or less.

Marion, N. Y.

[For extracted honey I do like a large deep frame, because I know from personal experience that powerful colonies can be reared in such-sized frames; but for my own purpose I should prefer the ten-frame Jumbo to an eight-frame. An eight-frame standard Langstroth or a ten-frame Danzenbaker has about the right capacity for the production of comb honey; and to my notion a ten-frame Jumbo, for some localities at least, offers certain advantages in the way of a non-swarming extracting hive not possessed by a hive of smaller dimensions. The eight-frame Jumbo is no larger in actual cubical capacity than the ten-frame Langstroth. If we are going to have a big hive, why not go the whole figure? The Dadants found the ten-frame capacity none too large. We have ten-frame Jumbo hives in our yards; and such great cards of brood, and such powerful colonies! It does one good to look at them and see them roll in the honey.

I tasted the honey at Dr. Gandy's that had a slight flavor of catnip. It was not unpleasant. But a pure-catnip honey might be very strong, and totally unfit for the market. I think we have had other reports to that effect. In the same way, hoarhound honey—the pure article—is vile stuff. But a very little of it mixed with some other good grade of honey gives it a nice flavor that is not unlike the hoarhound candy of our childhood days.—ED.]

THE BRODBECK SMOKER.

A New Principle in the Construction of Smokers.

BY GEORGE W. BRODBECK.

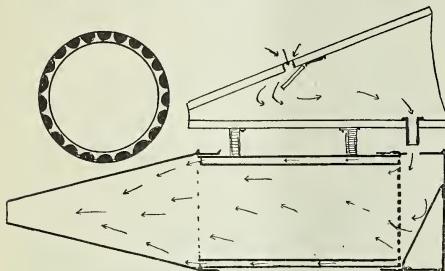
The smoker which is herewith represented has been in use for several years, letters patent having been issued to me Oct. 11, 1892. Owing to difficulties in manufacturing them here on this coast, their introduction has been somewhat limited. The constant importunities of those who have tried it and know of its good qualities induce me to present it to the public.

The illustration with the straight nozzle is defined as follows: A detachable nozzle, a fire-barrel inclosed by a cylindrical casing, and a detachable blast-chamber. The fire-barrel and cylindrical casing might be called an inner and outer barrel—the inner one the fire-barrel, the outer one the casing, a space of $\frac{1}{4}$ inch or more separating the two, held by bent flanges on the fire-barrel, and so cut as to permit ingress and egress

of air, or, in other words, an air-passage between the two.

The detachable blast-chamber at the rear consists of the usual fire-grate and forwardly inclined blast-deflector extending obliquely upward from the rear of the blast-chamber to and attached to the grate, sloping upward and forward of the blast-orifice in which the blast enters from the bellows.

The detachable blast-chamber caps on or



BRODBECK'S DOUBLE-BLAST SMOKER.

over the outer casing, the same as the nozzle. In practice we first remove the blast-chamber, inserting the fuel, whatever this may be, into the fire-barrel, the composition of which, in whole or part, should be of such nature that it will ignite readily by the application of a match, after which we replace the blast-chamber and proceed to use the bellows as is customary with other smokers. To replenish the fuel we insert it in the nozzle end the same as in the Corneil or Bingham.

The smoker being filled, pressure on the bellows forces the air into the orifice of the blast-chamber, striking the forwardly inclined deflector, passing on through the grating into the fire-barrel and the air-space between the latter and outer barrel. The course of this forced draft is shown by the darts on the illustrations.

The advantage derived from the use of the deflector is the increased force of the draft through the fuel, and the space between the double barrel; it also reflects the heat from the fire, thus modifying the consequent heating of the end of the blast-chamber. The insertion of an inner barrel or tube, with the air-space separating it from the outer one and the air, ingress openings at the ends permit a portion of the blast to pass through and out at the nozzle end without passing through the fuel, thus modifying the hot air, and thus partaking in part of the cold-air principle.

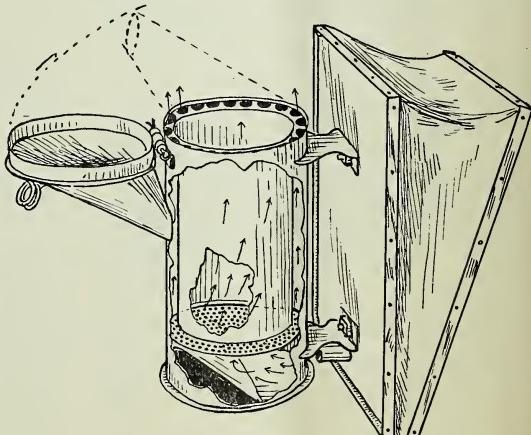
This air-passage also prolongs the life of the outer barrel; and in preventing extreme heating it affords better protection to the individual. The burning-out of the inner barrel is not a serious loss, and will not incapacitate the smoker, as will the destruction

of the outer one, and the former can be replaced at small expense. The removable breech and nozzle make it an ideal smoker to clean and to make necessary repairs. The inside fire-barrel is also just as effective in the Corneil as in my own.

Los Angeles, Cal.

[It will be noticed that the smoker shown at the top of the illustration is breech as well as muzzle loading; and from the evidence in hand, Mr. Brodbeck was one of the first to use the breech-loading smoker. But he has gone one step further by putting on a special blast arrangement. In effect this makes a combination of hot and cold blast. Part of the air from the bellows is deflected into the space between the outer and inner cylinder. The rest passes through the fire so that we get a double blast. The cold-blast principle does not give the dense smoke of the hot blast. While the smoke is not so subduing as a moderate blast with strong pungent smoke, there are certainly times when a strong blast—that is, strong blowing—is an advantage. Mr. Brodbeck secures, to a certain extent, the advantages of both hot and cold blast in one smoker.

I have made some tests myself, and I am not sure that the increased blast fully offsets the reduction in the density or subduing quality of the smoke. There are some bee-keepers who would prefer the Brodbeck principle, and some who would prefer the hot blast pure and simple. For the purpose of experiment we can furnish the Brodbeck principle in the Jumbo Corneil smoker, as here shown. One can try the Brodbeck



BRODBECK'S IMPROVEMENT AS APPLIED TO ONE OF ROOT'S JUMBO CORNEIL SMOKERS.

blast arrangement, then he can, if he desires, remove the inner cylinder, getting back to the old hot-blast principle.

Mr. Brodbeck secures one very important advantage; namely, that outer barrel, on account of its peculiar blast, is kept from becoming excessively hot. Many would consider this a decided improvement.—ED.]

COMB-HONEY PRODUCTION.

How to Obtain the Best Results Both as to Quality and Quantity; When and How to Get the Bees Ready for the Harvest. Part 2.

BY OREL L. HERSHISER.

Continued from last issue.

While very strong colonies are most desirable in the production of fancy comb honey, it is also of great importance to prepare them properly for work in the sections, and to manage them through the honey harvest in such manner as to make the entire working force effectual. To that end we should keep the field workers together and not allow that portion of the colony which is capable of honey-gathering to become divided, and one part thereof separated from the other, by inattention to natural swarms or haphazard forced swarming.

The colony may be prepared for comb-honey supers according to one of the several systems which have been found to be good, the method employed depending upon the requirements of the apiarist, whether he desires to produce all comb honey or whether he wishes also to produce extracted honey; whether he desires to add to his number of colonies, and, if he does, whether he prefers to do so by natural or by forced swarms. The varieties of honey-producing flowers, their extent, and the number of separate honey harvests through the season should also be carefully considered. If the main surplus season comes early, and there is no fall flow, the energies of the apiarist must be devoted to getting his bees in the best possible condition for this one harvest. If it comes late, or is continued over a good portion of the season, more time may be given in preparation, and stronger colonies built up in expectation of the long season's work, always bearing in mind this general rule: to breed the colony up to the greatest possible strength in field workers, in expectation of the main honey harvest, and, on the other hand, to avoid, as far as possible, the rearing of bees which will not reach the field working age till the honey harvest is past, and which will, therefore, be wasteful consumers. A thorough knowledge of the honey-producing flora within range of the bees is necessary to an intelligent application of these rules.

NATURAL SWARMS.

If the colony is allowed to cast a natural swarm it should be hived on the stand of the colony from which it issued, substituting the hive with the swarm for the parent hive, removing the latter to a new stand, thus making a strong swarm and keeping the field workers together. A colony that has swarmed, if treated in this manner, is unlikely to cast an after-swarm.

It frequently occurs that the super of sections on the hive which swarms is left unfinished. This unfinished super should be placed as the first one on the hive containing the swarm immediately after it is hived or at the time of hiving.

If the parent hive be placed as close as possible to the side of the hive with the swarm, the latter being on the parent stand, the entrance facing in the same direction, leaving it in this position a week, and then removing it to a stand ten or more feet from the parent stand, the bees from the parent hive, which have become old enough to fly during that time, will return to the hive with the swarm, adding greatly to its strength in field workers. If there is a good fall flow of honey the parent colony will gather ample winter stores, and may yield a little surplus honey; but, having been so thoroughly depleted of field workers, it will be slow in acquiring the necessary strength for surplus-honey gathering.

The brood-frames of the hive containing the swarm should be provided with foundation starters, not more than two inches in width, and a queen-excluding honey-board should be used to keep the queen out of the super. If a shallow brood-body is used, no contraction of the brood-space will be necessary. Brood-bodies with deep frames should be contracted to a space equivalent to six or eight Langstroth frames. To prevent possible confusion and scattering of the bees, among other colonies in the apiary, when returning from the fields to their accustomed stand and home, the appearance of the front and entrance to the hive for the swarm should be, as nearly as possible, like that of the parent hive. It is a great advantage and convenience to have hives of uniform pattern.

DEQUEENED AND REQUEENED COLONIES.

An effectual non-swarming method consists in selecting the best frames of brood from both bodies of the double brood-chamber, using a sufficient number to fill one body, on the same stand, depriving the colony of its queen. In eight days the colony thus prepared should be examined, and all queen-cells removed, making it hopelessly queenless, after which no swarm will issue if queen-cells have not been overlooked. The other body, and the combs of brood not used in the hive prepared for comb-honey supers, may be employed in building up some weak colony; or colonies too weak for comb-honey production may be divided into nuclei and built up with the frames of brood, thus providing a means of preserving the queen from the colony just prepared for the comb-honey super; or the combs of brood may be used to strengthen a colony which is almost in condition for comb-honey supers; or the body, with the combs, may be used as an extracting-super on a colony run for extracted honey; or they and the queen may be disposed of in some other way as suggested by the requirements of the apiarist. A colony run in this manner requires no honey-board. The colony should be requeened at the close of the swarming season.

FORCED SWARMS MADE BY DIVIDING.

These strong colonies in double brood-bodies may also be treated as follows:

About four weeks before the storing of the first surplus honey may be expected to commence, which will be from white clover, in regions where that is an important honey-plant, but not earlier than the time when, if the bees swarmed naturally, the brood in the hive from which the swarm may have issued would not chill; remove the lower body of the double brood-chamber, placing it on a stand by the side of (and as close as possible to) the hive from which it was removed with the entrance in the same direction, being sure to have the queen in this removed body. In place of the body so removed, substitute one containing clean frames with narrow foundation starters, not more than two inches in width. Now all the field-working bees will return to the hive on the old stand, the upper body of which contains abundance of brood and young bees. Queen-cells will be immediately started, usually along the lower margin of the combs in the upper body, and in due course of time the colony will contain a young queen. If the precaution is taken of removing all but one selected queen-cell, there will be no disappointing division of the colony by one of the several queens, which would otherwise develop, swarming out with part of the bees.

In anticipation of making the division of the colony, as here described, queen-cells may be reared from our choice queens, and supplied, one each, to the colonies under preparation, thus improving the stock of the whole apiary, and at the same time very materially forwarding the work of preparation.

If some honey is coming in, work will progress in the lower body; and by the time for putting on the supers the brood-comb starters will be sufficiently drawn out for the queen's use, and she will not be likely to enter the sections when the super is substituted for the upper body. If the manipulations have been performed at the proper time, the brood in the upper body will be about all hatched at the time when the main honey-flow commences in earnest.

It is advantageous to the apiarist to know the condition of his colonies as to queens, and it is advisable to proceed with the work of preparation with the aim of bringing the young queen to the laying age at the time of putting on the supers, that he may ascertain whether or not she is laying. When the supers are needed they should be put on if the queen has not commenced to lay.

At this time, just as honey commences to come in rapidly, remove the hive containing the old queen, from the side of the hive under preparation for comb-honey production, to a new stand, somewhat removed from the comb-honey colony. The field-worker bees from the old colony will now return to the new one, adding greatly to its strength. Now shake the bees from the frames of the upper body of the comb-honey colony into its lower body, or in front of it, and use this upper body and its combs as an extracting-super for the hive with the old queen.

If no increase is desired, when the colony on the old stand is prepared for the comb-honey super, and honey is being gathered, remove the colony containing the old queen to the opposite side of (and as near as possible to) the hive prepared for comb-honey supers, with the entrance in the same direction. In a week remove it to the now opposite side in the position it formerly occupied, and continue these weekly movements from side to opposite side throughout the honey harvest, after which the queen may be disposed of and the remaining brood used to strengthen the weaker colonies, and the combs extracted. By this method the comb-honey colony is kept supplied with worker bees sufficient to keep the hive and super crowded with a strong working force.

This method of keeping the comb-honey colony full of bees throughout the honey harvest, when no increase is desired, may also be used in connection with the management of natural swarms as described under that head, making the first move of the parent colony to the opposite side of the comb-honey hive at the end of one week after the swarm issues, and proceeding thereafter according to the above description. It is not advised to strengthen colonies in this manner when honey is not being gathered.

The greatest obstacle to success in extensive commercial apiculture, especially in comb-honey production, has been the inability of the apiarist to bring swarming under control, and hence the lack of systematic work in the apiaries. A perfect, reliable, and practical non-swarming system has been frequently sought, with commendable zeal by numerous experimenters, but the coveted prize has often "eluded their eager grasp;" but if it is true, as has been alleged by some of the *savants* of apiculture, that a colony with a young queen will not swarm during the season she is reared, and if this rule may be depended upon to be reasonably certain, this fact, in addition to the safeguard against swarming found in the use of a brood-chamber with narrow starters in the brood-frames, furnishes the essential framework of such a system. Moreover, by this system we obtain colonies of great strength, especially if no increase is made, in which case we practically have the use of two queens in the comb-honey hive, resulting in an increased amount of fancy comb honey with a minimum amount of labor. Such a system will make it possible to manage out-apiaries with the assurance that the working force is not absconding in the absence of the apiarist at the only season of the year when it is of value to him, and the work of the several out-apiaries may be perfectly systematized.

Other methods of making forced swarms, which have been technically designated by the terms "shook," "brushed," or "driven" swarms, and the system of management in reference to them, have been so thoroughly described during the past two or three years as to require no further

treatment here, except as a further caution to the apiarist, to reiterate what has been frequently stated, that such swarms should not be made till shortly prior to the time when the colony would have swarmed naturally.

To be continued.

INCREASING THE DEMAND FOR HONEY.

The Folly of Talking only in the Bee-papers where only a Few Bee-men are Interested; the Value of the Local Newspaper as a Means of Interesting the Public.

BY WM. M. WHITNEY.

Mr. Editor:—The great question among practical bee-keepers at the present time seems to be, "How can a greater demand for honey be created, and, as a consequence, a better price be obtained?" In transportation, manufacturing, and large commercial operations, combination appears to solve the problem. *Bacillus comblinus* seems to be floating in the atmosphere, and bee-keepers are becoming infected. It is thought by many that, if all the bee-keepers of the country should combine, they would become masters of the situation, and that better and more uniform prices would be obtained for the products of the apiary. Very true; but if—"there's the rub." To secure organization and combination among any class of producers so widely separated, the majority of whom are operating only in a small way, is next to impossible. When have farmers, fruit-growers, poultry-raisers, or any other class of producers in a small way, scattered widely over the country, ever been able to combine so as to control the price of any commodity they produce?

It is true that the California fruit-growers have, to some extent, been able to fix prices of fruit by organization; but suppose the same fruits were being cultivated by every farmer and small-fruit grower all over this country, as honey is being produced, do you suppose any combination could be formed to control prices?

In the first place there is but a small per cent of the bee-keepers who take interest enough in the business to join even a local organization, or who take any literature on the subject of bee-keeping. They treat apiculture as an insignificant branch of farming, like poultry, which is allowed to care for itself, as a rule. If there happens to be a surplus, it is taken, like butter and eggs, etc., to the local grocer, and exchanged for such supplies as are needed, and at such price as the grocer sees fit to give. The price, usually a low one, is fixed, not by the producer, but by the middleman, and is the standard price for that locality. What is the bee-keeper with a few hundred pounds of surplus choice to fancy honey to do but to take what he can get, or go into competition with the grocer and peddle it? Few persons are adapted to doing that kind of

work, or have the time in which to do it. He might ship to some commission house, but that so often proves so unsatisfactory that he thinks a bird in the hand is worth two in the bush, so takes what is offered at home.

This may be said to be an argument in favor of combination. Grant it; but with nine-tenths of the bee-keepers in the country outside of any organization, whom you could not whip in with a cat-o-nine-tails, how are you to combine?

Now, it seems to me that the surest and best way to create a demand for honey, and thus enhance the price, would be to get the local press interested; i. e., publish through the local papers instruction or information regarding the uses and benefits of honey as a food, a medicine, etc. It is surprising how little is known by the majority of people, even in the country, of the value of honey in numberless ways in a family. If we who are interested in this matter (and all bee-keepers ought to be) would thus place before the people in a judicious manner the ways in which honey may be used to great advantage, many families that have considered it a luxury in which they could not indulge might be induced to try it. For instance, here is a family fond of warm biscuit and honey, or pancakes and honey, but think they can not afford it, but would adopt it if they were told that a syrup of granulated sugar, costing about 3 cts. per lb., mixed with good thick extracted honey, costing in bulk, say 12 cts. per lb., made a very fine syrup for the purpose, with all the flavor of honey, and making the average cost only about 7 cts. per lb. How much better this would be for the consumer than to buy the stuff put on the market by the trade generally, with nobody responsible for its manufacture, and composed principally of glucose or something worse! When mixed at home we know what we are using.

The above is simply an illustration of what might be done were we to turn our attention in the direction of the local papers. We may talk till doomsday through the bee-journals, that nobody sees but the bee-keepers, and but few of them, I'm sorry to say, and it will never create a demand for honey one iota. What would we think of the business sense of a manufacturing establishment that exploited its goods and wares through the medium of a publication that fell into the hands of its competitors only? That is substantially what bee-keepers are doing in their efforts to market their honey. They talk in the bee-journals; they talk in conventions, where there is no one to hear but themselves. Why, it almost seems like lying awake at night to talk to oneself.

Our queen bee-keepers can give numerous recipes for cooking with honey as an ingredient; simple remedies for various complaints with honey as an important factor, etc., until the use of honey will be considered a necessity. I repeat, we must get at the public through the local newspaper. Then when the use of honey has become so popu-

lar; that the crop of the small bee-keepers is consumed in the small towns and country, and the people cry for more, the large producers can easily combine to control prices in the large commercial centers. Then prices will boom, and the millennium in bee-dom will be ushered in until the Attorney-General gets after us, and puts us, bees and all, in jail for unlawful combination.

Geneva Lake, Wis.

[There is a great deal of truth in what you say. Bee-keepers should contrive somehow to get articles into their local papers, giving general information about the production of honey—how it is thrown out by means of the extractor, etc. If all of our subscribers would volunteer to send a communication to their local papers, describing how they produce comb honey, and inviting any one interested to come and see how honey is taken from the hive, it would stimulate a local demand for honey, and do some permanent advertising that would be of great value. We are printing by the thousands our honey-leaflets, and they are being sent out all over the land. These, as some of our subscribers know, go on to tell about the wholesomeness of honey; why dyspeptics can eat it when they can not take any other sweet; about the different kinds of honey, and finally winds up with a long list of honey cooking-recipes. This leaflet was written by Dr. C. C. Miller, and all the recipes have been tested carefully, so that we know they are good.

They are furnished at practically their cost to us; and any bee-keeper can have his business card printed on them at a slight additional cost. If one of them is put in every package of honey sold or handed out in bunches of two or three dozen to the grocers, to give to their customers in turn, a largely increased demand will be the result.

I believe most thoroughly in organization, but it would be futile to attempt any thing in the way of one national in its scope for the purpose of handling honey. Local or State exchanges must first be put on a practical working basis. As is well known, the Colorado association has demonstrated already what can be done; and California has started out with flying colors.—Ed.]

BEE-PARALYSIS.

How to Cure; a Rational Plan.

BY A READER.

I notice several inquiries of late in the different bee-papers in regard to bee-paralysis. I have had several years' experience with this disease. Several years ago, when I kept bees in box hives, I noticed this disease, but at that time I did not know what the trouble was, as I was not posted in bee lore; but since keeping bees in frame hives, investing money in them, and depending partly on them for a living, I have studied the disease a good deal, for I have had more

or less of it to contend with every year since.

When the disease first appears the bees will turn black, look slick and shiny, and have a trembling motion. Not every bee that takes the disease turns black; for I have seen them die with it without ever turning black; but they all have a trembling motion; there is always a less number of dead bees around the entrance during a good honey-flow, due, I suppose, to greater activity among the bees at this time, causing more of the affected bees to die out in the fields, as I have found them dead at their watering-places that, to all appearances, had died with this disease. I also have found them dead around flowers out in the fields. I have seen them in front of the entrances of their hives with pollen on their legs, trembling, shaking, dying with this disease; so it seems from this that it is very sudden in its attack. At times this is a very peculiar disease, as some colonies never become affected with it, and some that have the disease get well without any treatment, and some will die in a few weeks if they are not treated, while others will dwindle along all season and give no surplus honey, and finally get well.!

I believe some writers have claimed that bad food causes the disease. I don't believe food has much to do with it. In the spring of 1899 and early summer of that year, I had five colonies of bees standing in my yard very close to the dwelling. One of these colonies took the disease; and as I was very busy I never moved them. In about ten days the one next to the affected one had taken the disease, and so on down the line until all had it. One evening I came home, and had a case of robbing on hand. My favorite colony down among the other bees, some fifty yards distant, was doing the robbing. I soon put a stop to the mischievous rascals, but they had almost robbed them out. I expected this colony that did the robbing to take the disease; but, to my surprise, they were never affected in the least. These bees all had stores gathered from the same source. Shortly after this I moved these five colonies some distance from home, as I wanted to get them away from the dwelling. I let them stay two weeks, and moved them back. I noticed after moving them the second time that there were not so many dead bees at the entrances of four of them; but the fifth one, however, was dying badly, and was very weak, so I moved them again, this making the third time that I had moved them. This last move helped them so they soon got all right. But I got no surplus honey from them that season, while the average from colonies not affected was about 100 lbs. per colony. My honey crop for that year was cut short about 40 per cent on account of this disease; and hence I was well nigh discouraged with bee-keeping; but moving these diseased colonies, and noting the effect it had on them, I got the idea in my head that this disease could be cured if properly treated.

Late that summer I had a colony that was about as badly affected as any I had ever seen. While watching them at work dragging off dead and dying bees, and in some instances flying with them and dropping them right in front of the entrances of other hives, fast spreading the disease all over the apiary, the idea occurred to me that if I could trap these dead and dying bees, and destroy them, I could effect a cure. So I dug a ditch six inches wide and three inches deep in front of this hive, the ditch extending around to the sides of the hive. It is necessary for the hive to stand very close to the ground. The healthy bees will drag the diseased ones out and fall into this ditch, and have to leave the sick bee there, for it can't fly out; and all sick bees that crawl out of their own accord will fall into this pit and can't get out, so you have these diseased bees trapped. I go out every evening and take up these dead bees, and burn them, destroying the disease germ, hence I effect a cure. I have tried this remedy several years, and have never failed yet to cure a colony thus treated; in fact, I would not be in the bee business to-day if I had not discovered this remedy. It usually takes about ten days to effect a cure.

[The essential part of the cure above mentioned seems to be isolation. Other writers have said that bee-paralysis could be cured if the bees could be given a chance to carry away the diseased and the dead.
—ED.]

A CHEAP AND SERVICEABLE WAX-PRESS.

How to Render Wax in a Wash-boiler, and Squeeze it in a Separate Press without Freezing or Chilling.

BY F. A. SALISBURY.

For a number of years we have been interested in wax-presses, having used nearly all styles. The Swiss wax-extractor was the first one, but we found it too slow, besides wasting a big lot of wax. We next tried quite a number of processes, but found all to be of no practical use. At last we tried a press, and found it to be better than any thing yet tried. We have gotten out about 150 lbs. of wax in one day with the help of a large press that used a common jack-screw; but this was too large for ordinary use, and took up a great deal of room. Bee-keepers do not, as a general thing, have any thing besides a kitchen stove on which to work melting up combs. Quite a few have asked us from time to time how to render out wax, but we could only tell them to use some kind of press. At last we tried to get up something that the average bee-keeper could afford to buy, and a year ago made a press, but found it to be too weak to stand such a pressure as was given to it by a screw. This last winter we tried our hand again, and think we have something that will be a benefit to all bee-keepers, for by its use all the wax that is possible to be

pressed out with any kind of press can be gotten out by our cheap and simple press. There were quite a good many things to think of when inventing, and some of them are as follows:

1. The wax was to be kept hot as long as possible to prevent it from freezing in the press.

2. The follower should go down as nearly level as possible, no matter how the slumgum under it was placed.

3. It should all be inclosed, so that wax would not be spouting out on the floor.

4. The top piece that holds the screw should be perfectly immovable sidewise.

5. The whole top should be covered to prevent the escape of heat while pressing.

6. The bolts that go through the wood part should also be perfectly plumb at all times. This can not be done unless the bolts are through wood, for they will move slightly, and by so doing the screw will be tipped one side, and the pressure will tend to push the follower to one side. With the press you can get out all the wax from old combs that you can melt up on two ordinary kitchen ranges. We have gotten out 49 lbs. in one day with it, of nice yellow wax. We have just seen 153 lbs. of wax gotten out by the Ferris wax-extractor, and it was of a pretty dark color. Now, it is known that iron will turn wax dark, and zinc green. We know this to be so, for we tried zinc or galvanized iron for melting up wax for foundation, and found it would be green after standing some time. With iron the wax will be dark in color. We believe all manufacturers of foundation use wooden tubs in which to melt wax, just for the reasons I give. Our press is all wood, and will impart no coloring to the wax.

In using the press a common wash-boiler should be used to boil the combs, and they should be boiled till they are thoroughly melted. This is known by a foam coming on top like soapsuds. The comb-cells should be all separate, and just like kernels of corn. This will give a chance for the boiling water to melt the wax between them. Have on top of stove a pail or pan containing boiling water, and keep the follower in it, grooved side down. Place in the press a good strong piece of cheese-cloth having the same reach across the bottom and up the sides, and about six inches projecting on all sides. Place a board from top of the boiler to the press, so as to catch the drip, and dip the slumgum into the press till it is within three inches of top; lay cheese-cloth over it so as to protect the follower from coming in contact with the slumgum. Place the follower on top of all, and then the cover with the screw. Screw down till a stream comes from the spout, and keep screwing down gradually till all the wax is out. Do not be in a hurry to screw down, but do it slowly. You may ask, "Why not have the press higher or deeper?" But you will readily see that, if it were deeper, bee-keepers would fill it too full, and the slumgum, when pressed as far down as possible, will

be still too thick for all the wax to escape. Better not press so much at a time, and be sure all the wax is out. The slumgum, when pressed as much as it can be, should not be over one inch thick, and $\frac{3}{4}$ would be still better. If bee-keepers could have some sort of press that did not cost too much, one

they could afford to buy, the foundation used in the brood-chamber would cost them *nothing*. For example, suppose they had 20 hives in which they wanted to use full sheets of foundation in the frames. Now, to fill 20 hives with light brood will take about 20 lbs. This at, say, 50 cents per pound, is \$10.00. Now, after five years' use they have this press, and render the combs into wax. They will get on an average from each hive 2 lbs. of wax. This at 31 cts. per pound, which is the market price now, would bring them 62 cts. per hive, or, for the 20, \$12.40. They are ahead \$2.40 by using the foundation, besides having the use of nice straight combs in the hives while in use. I have always contended that the use of foundation in the brood-chamber costs the bee-keepers nothing. If I am not right, will some one please tell me where? By the use of a wax-press the wax can be gotten out at any time, and it is worth cash at any time of the year. We consider wax just as good as cash, and would just as soon have wax on hand as cash in bank. It is simply exchanging cash for wax in the first place, and then cash for wax, without a particle of loss to bee-keepers. All that is needed is some kind of cheap simple practical press that any bee-keeper, no matter how small, can afford to purchase.

Syracuse, N. Y.

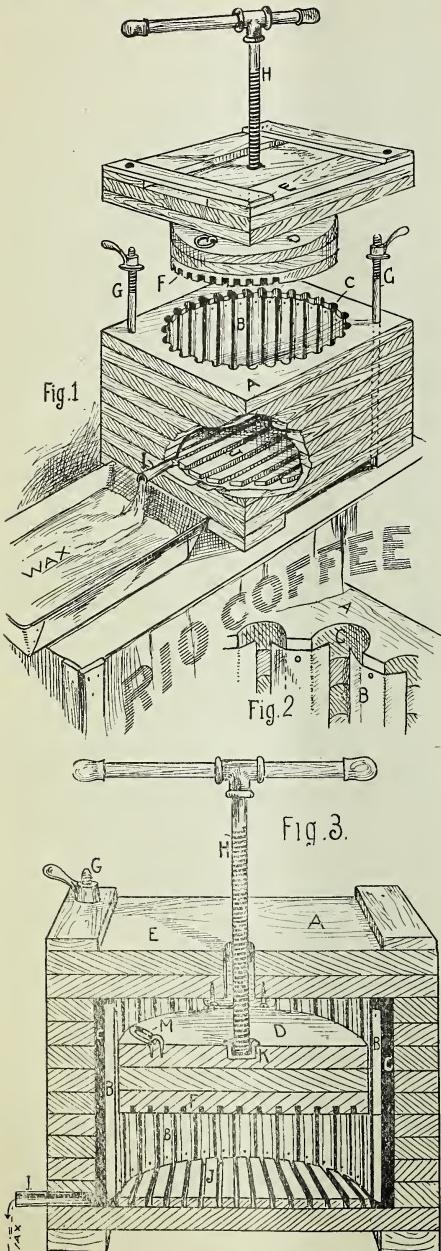
[Mr. Salisbury has been working on the problem of getting up a cheap press. As nearly as we can estimate, this could be sold for about \$4.00 at retail; and if one were handy with tools he might be able to make one at a cost of material not to exceed \$2.00. The press Mr. Salisbury sent us was made entirely of hard wood. Soft wood might be used, perhaps. But there is danger that it might be too porous or spongy, owing to the absorption of steam from the slumgum.

We told our artist to show only two thumbscrews; but recent experiments have convinced us that four will be almost a necessity. Under the influence of the hot steam the cover would be liable to twist diagonally under the strain. With four screws it would probably hold its position.

In order to make a separate wax-press—one that does not use either steam or water—effective, the operator must work rapidly, and even then there will be danger of the slumgum “freezing” or chilling. Just when it begins to be a little cold, the free wax will refuse to run off, of course.

If one were to follow Mr. Salisbury's directions he would probably be able to get very good results. However, I am still of the opinion that a press that allows steam to circulate all around the slumgum during the whole time of squeezing, keeping the wax hot, will yield more wax in the hands of the *average person* than one that takes it hot from the boiler, and depends on pressure being applied before it can cool.

I believe our friend is in error when he states that a metal wax-press of galvanized iron, or black iron, would discolor the wax



SALISBURY'S HOME-MADE WAX-PRESS; SECTIONAL VIEW.

going through it. We melt from 60 to 80 tons of wax every season, almost all of which is melted over hot black iron steam-pipes. After a series of experiments we can not see that black iron, as we use it, dis-colors the wax in the least, because the wax flows over them rapidly. If the wax is allowed to stand in an iron kettle for several hours, especially if it is reheated several times, it will darken. If it is confined in a galvanized receptacle for a continued length of time it would assume a greenish tinge. But old comb that is put into either a galvanized or black-iron wax-press, and melted, should pass through the machine so rapidly that no discoloration will take place—that is, if directions are followed not to let the wax boil or simmer in the inside of the machine. When it is once hot and thoroughly melted, pressure should be applied at once, letting the free wax escape. It will then come out with a beautiful yellow color.—ED.]

THE NEW FOUL-BROOD CURE.

How to Apply Formaldehyde; Why and How it Cures; a Seasonable and Valuable Article.

BY WILLIAM HAHMAN.

Mr. Root:—I see your remarks on the use of formaldehyde in your Apr. 15th issue. I think I wrote you of my curing combs of infectious foul brood by means of this chemical late last summer, and was somewhat surprised that you did not give this matter the publicity it deserves. Foul brood is a germ disease, just as smallpox probably is; and my reasoning was that, if formaldehyde can thoroughly and completely disinfect premises harboring germs of smallpox, and completely destroy the germs, spores, and all traces of the disease, it might also kill and eradicate foul brood. My tests satisfied me that such treatment does entirely destroy foul brood. The disease did not reappear in combs that were infected and so treated. The chemical is not applied by spraying, as you suppose, but the vapor is driven off by evaporating with a lamp. Various styles of formaldehyde-fumigators are now for sale at drugstores at 25 cents each. Each fumigator contains enough formaldehyde to disinfect a common living-room. The cheaper plan is to buy the formaldehyde (40° solution), put a little of it in a tin dish, and place it over a small coal-oil lamp. I fumigated five or six hive-bodies full of frames at one time in this way, with three or four tablespoonfuls of formaldehyde, putting the lamp and tin dish in a hive-body and empty super, and stacking on top the hives to be fumigated. I lighted the lamp before stacking up; and after all the formaldehyde was evaporated I tilted up the hives enough to blow the lamp out and let the whole outfit stand 12 or 14 hours, shut up tight. After it was all over it took quite a lot of airing to reduce the pungent odor of the gas, and it annoyed

the bees to receive one of these frames in the colony; but they managed to dispel the rest of the fumes.

The fact that boiling does not destroy the spores of foul brood does not prove very much. It goes to show that we must use an entirely different method of eradication. Because we can drown a cat, it does not prove that we can destroy other animal life in the same way; for fishes could stand no end of drowning. It does not even prove that fishes are particularly hard to kill, but that we must try some other method. We do know that formaldehyde vapor, or fumes, are particularly destructive to germ life; and I believe that its use will mean a big thing for the bee-keeping fraternity.

Altoona, Pa., April 19.

[Still the evidence is accumulating, going to show that formaldehyde kills even the spores in affected combs. We shall be very glad to hear from others who have any thing to offer. As I have said before, if we can cure foul brood without melting or burning the combs we shall have made one great step toward economy in treatment. If there is any thing that a practical bee-keeper dislikes to do it is to melt up or burn up several hundred of his choice combs. There is no better property in a bee-yard.—ED.]

[*Later.*—Since the foregoing was received, the following has come to hand, which will explain itself:]

I will add that the cases I treated last year appear to be entirely cured up to this time this spring. I have only one case on hand, which was not treated with formaldehyde. I expect to get rid of this in a few days.

WILLIAM HAHMAN.

Altoona, Pa., May 7, 1903.

FORMALDEHYDE APPLIED IN THE FORM OF A GAS AND NOT OF A SPRAY.

In your footnote to my article on page 326 you infer that we spray the combs with formaldehyde. This we formerly did, but we now find it cheaper, quicker, and much more effective to use the gas of formaldehyde by putting the liquid in a tight can with a small tube attached to the top. A rubber tube is adjusted to this tube, and connected with the comb-box. The can is then placed on an oil-stove, and the liquid boiled about twenty minutes. This frees the gas from the liquid, and causes it to pass through the rubber tube into the comb-box, leaving the water in the can, unless it is boiled so long that it is converted into steam, which will do no harm.

The reason for making the gas outside of the comb-box is to avoid burning the combs by the gas taking fire.

Bee-inspector Wright, of the first division of New York, uses a gas-generator in the comb-box; but it is made something like the miners' safety-lamp, and uses formalin pastils. The necessary apparatus can be had through Schering & Glatz, 58 Maiden Lane, New York. If any brood hatches from any

diseased combs after being treated it shows that not enough formalin was used, or else the comb-box allowed the gas to escape too rapidly, and should be more thoroughly treated a second time. Allow the combs to remain in the box three or four hours after treating. While all the brood of diseased colonies is killed in the treatment, we have a system of management that sacrifices but little brood, and also cures the diseased bees, and puts them in proper condition to secure a crop of honey.

CHARLES STEWART.

Sammonsburg, N. Y.

[Yes, I inferred that you used the spray. In our last issue a correction was made, to the effect that the gas and not the spray was applied to the diseased combs. Our hopes are raised very high, and we trust the inspectors of New York will give this treatment a thorough and extensive test.—ED.]



A HIVE-SPACING RABBIT FOR FRAMES; WHY SUCH AN ARRANGEMENT IS NOT PRACTICAL FOR GENERAL USE.

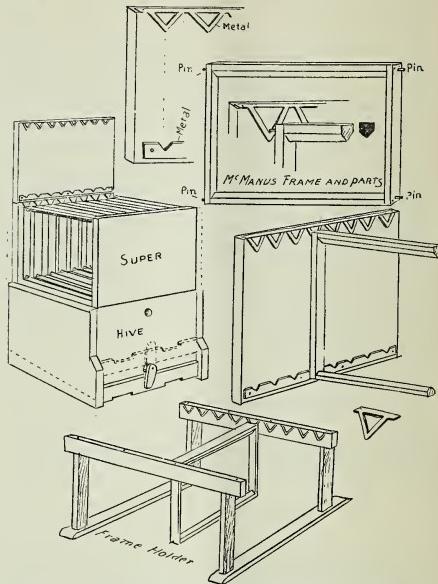
I send you some photos showing my beehive I have worked on for 12 or 14 years. You must know in the start that I never read a bee journal in my life until last fall. I sent to you for a catalog, and you sent me GLEANINGS with it, and that was the first bee-paper I ever owned. I knew nothing of the bee-world outside of what few bees I owned, and a few stands among my neighbors.

I have worked all kinds of hives, and found none that suited me. I had so much trouble removing the frames it disgusted me, and that started me to devise something better, so you can see what I accomplished.

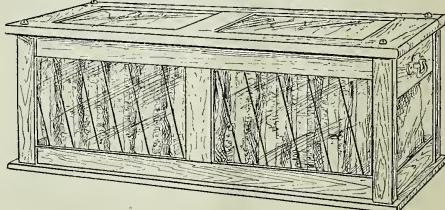
The drawing shows the hive-body and the method of supporting the frames. There is a pin in each corner of the frame; and when you place the frames in the hive the pins in the corners of the frame that goes in the hive first passes between the V-shaped metal bar at the top. After the pins are below the V, you can run it from one side to the other; and when it drops into its place the pin hits the V in the metal bar at the bottom, and the pins at the top of the frame strike the V in the top.

For the purpose of handling, the frames are put in what I call the handy comb-holder, shown at the bottom of the drawing. When going through a hive I lift the frames out and place them in the holder, where they are spaced two inches apart, so as not to

touch. I never hurt any bees, and they are all together, and in as nice shape as in the hive. The pins in the corner of the frames keep the frames from striking against the sides of the hive and killing the bees.



You can see by this device that the frame can be reversed, either side up; right side up, they are self-spacing, self-bracing, simple, durable, and can not be shaken out of place, and the bees can not glue them; but they can be lifted with the finger.



The next drawing shows the case for the honey. When the frames are filled they are lifted out of the hive and set in the case; close the lid, and it is complete. The frames hold from 6 to 6½ lbs. of honey after they are finished. When they are in the case I can set it on either side, top or bottom, and they stay in place.

Rushville, Ind.

T. McMANUS.

[I have illustrated the hive here shown, not because I consider it a practical arrangement for general use, but because the principle underlying it is "invented" every once in a while. In our back volumes we have several different illustrations showing this principle. But I have yet to know of a case where it has been used very extensively by any bee-keeper who produces tons of honey. In saying this I do not wish

to disparage the work of friend M., for he himself acknowledges he has not been very much in touch with modern methods now in vogue. The hive and frame with which he was disgusted were probably not the modern hives now in use with their self-spacing frames. It may be appropriate, as this thing is coming up every once in a while, to state some of the serious objections to this arrangement.

A frame-spacing rabbet in the hive does not permit of the movement of the frames from one side of the hive to the other without taking them out one by one. In order to shift the position of the frames *en masse*, every one of the frames must be lifted from its position, then be set out, and put in a holder such as is shown in the bottom of the engraving. Then they can be put in the desired position one by one. In spreading brood, for example, one might take out one or two frames in the center, and desire to shift them to the outside, closing up the space from which the frames have been taken. With the arrangement here shown he would have to manipulate at least half the frames, *one by one*. Where the spacing arrangement is on the frame itself he would practically have to handle only the two frames, and those in a pair. After the space is made in the center of the brood-nest, the remaining frames could be shoved over *en masse* without removing a frame, closing up the gap made. The frames taken out could then be put in the new gap made by closing up the other. Then the arrangement of adjusting these individual frames to place consumes considerable time. The lower nail-head must be slipped in between the V-shaped holes in the upper rabbet—an operation that requires some precision of movement.

Still another serious objection is that frames of this type can not be handled in groups of two, three, and four. Modern apiculture demands that the brood-nest shall be manipulated in halves or quarters to a great extent. Any system that requires the separate manipulation of each frame must be considered a failure.

The general arrangement of the self-spacing rabbet or notched rabbet, at first sight looks very pretty in theory; and it is pretty in practice with a few hives, providing one has never had experience with a better arrangement. It is my opinion that friend McManus had better abandon the arrangement before it costs him too much money, in the time wasted in handling such a hive. At a rough guess I should say that any of the staple-spaced frames—the Hoffman or any of the standard closed-end frames—could be handled in a half or a quarter of the time that would be required by the frame shown in the illustration.—ED.]

NEW OR OLD COMB FOR BEES.

On p. 131 Dr. Miller says he would like to hear of "just one case" where the bees passed over old comb in good condition,

leaving cells in it entirely empty, to occupy new comb or foundation. I think I can supply him with that one case. Mar. 31st I got a large swarm which I put into a hive containing four full sheets of foundation, three old worker combs, and one frame with a starter. The frame with the starter was on the outside—I don't mean outside of the hive. Next came a sheet of foundation, then one of comb; then another sheet of foundation, and so on. On examining the colony later I found that the bees had drawn out the foundation, and the queen had filled it with eggs, skipping the old comb, not putting even one egg in it. Of course, I do not mean to say that the old combs were quite empty, because they had a good lot of pollen and honey in them; but, as I understand it, what Dr. Miller and yourself wanted to find out was this: Which does the *queen* prefer—old or new comb?

REGINALD C. HOLLE.

Alma, Brownstown, Jamaica, April 13.

[Although you do not make the direct statement, yet you imply that the bees and the queen in this case left the old comb and took up with the new comb and foundation. Dr. Miller will please take notice.—ED.]

PARROTS IN THE APIARY, TO ANNOUNCE SWARMING.

In reply to an article written for GLEANINGS some time ago, about having dogs to watch for swarms, I will tell you of parrots for that purpose. Being a parrot-dealer myself I had a few birds left over from last season's trade. One of them I took a fancy for, or it took a fancy for me, I don't know which; but when I came home the parrot would call out, in Spanish, "There comes the boy," as the men who were working for me would say when I was coming home. You see that is how I got the idea. "Well," said I to myself, "if the parrot knows me, and calls out that I am coming, that is a warning for the men." Then I wondered if it would give me the same warning when the bees swarm. I tried it, putting the parrot's perch near the bees, and left it there for about six weeks. When swarming began I hired a small boy to watch for swarms, as the bees generally swarm when I am at dinner or lunch. The boy would call out, "*Las abejas!*" (the bees) over and over, till I could get there and see to the bees myself.

Well, this went on for another month and a half, more or less every day, and sometimes three or four times a day. At the end of the six weeks I told the boy that he need not come any more, as swarming was over. So I paid him, and he did not come again. Then I said to myself, "What bad luck I had!" What I did not care for the parrot to learn (as it was to give warning to the men) it did learn, but not to give me warning about the bees. Four days after I told the boy not to return I heard a voice calling, "*Las abejas!*" only it sounded like a woman's voice. I ran to see what it was,

and, sure enough, it was a swarm, and the parrot was calling for all it was worth. You see I did not till then know that the parrot knew any thing, as the boy never told me a word about the bird, as he knew that would mean he would lose his job.

Two things are greatly in favor of the parrot: 1. It costs only a trifle to buy one, compared with a dog; 2. It does not cost a cent to feed one, as it eats every thing human beings can, except grease or meat of any kind. That is a saving alone of at least ten or twelve cents a day — what the dog would cost. Again, it can tell by talking and giving the exact call, not like a dog that barks, fooling you many times by barking at nothing, or at a cat or person. Besides, the bird is green, with a rich yellow head, and looks like a flower, and therefore it can be among the bees and yet not get stung like a dog, and it does not need a house with a glass front, as does a dog. Finally, the bird is a great pet, and makes a bee-keeper's wife more than happy.

EMILIO ASTIE.

Tlalpam, Mexico, April 16.

[Parrots are rather expensive in this part of the country. I have known that some of their sayings dovetailed in with actual occurrences. I used to think they simply imitated; but from some observations I have made, it appears that one bird at least will get off remarks that are quite appropriate for the occasion. Like every other good thing, I suppose there are parrots and parrots. While some might be bright enough, when a swarm was out, to give the alarm, others would be practically worthless.—ED.]

CAN A PERSON BE SERIOUSLY POISONED BY THE FUMES FROM A STRONG COLONY OF BEES?

March 17th was a fine warm day, and I opened the brood-chamber to look through the combs, trim off the burrs, etc. After working with the combs about 20 minutes or more I began to get sick at the stomach, and to feel swelled up about my face and body. I felt as a person does when one of his limbs goes to sleep; and I was so desperately sick I had to leave the bees and frames, some of them out of the hive. My wife bathed me and fanned me, and I manipulated my face and body as best I could to keep up circulation. I thought it was on account of stooping over too long, causing the blood to rush to my head. After I got so I could place the frames back I did so, and left them alone that day. The next day I felt as though I was over my trouble, and opened the hive and finished it, or all but the last frame, and felt the same trouble coming on me. As soon as I felt it I quit at once, but that didn't help it any. It came on anyway. I wasn't stung any at this time either. I got deathly sick, and lost control of myself. My circulation stopped. I turned red, green, and white, my finger-nails blue. I had the doctor called as

quickly as my wife could get him. He was badly alarmed about my condition, and said I had a close call. I got stung some at the last while putting the frames in that I had out. After I got so sick, those stings all festered up the next day, full of matter and water. The stand is a very strong colony of Italians, and I think gentle. I had my veil on, and gloves. The hive was full of brood, and doing finely.

I have searched the A B C of Bee Culture through, looking up this matter. I can not find any thing about bees making people sick at all, as in my case. I have read the matter on bee-stings. It doesn't refer to my case.

I should like to know the cause of this trouble. I am told that some people can not work with bees at all; that the fumes from the hive do not agree with them, or their system. I thought it may have been on account of my system being somewhat out of order at the time; but I will not bother the hive until I know more about the matter.

Huntsville, Ala. C. R. HAMILTON.

[A year or so ago we had one other report just like this, of a case where a lady was poisoned by merely inhaling the fumes as they arose from an ordinary colony of bees. So poisonous were these fumes she was obliged, much against her will, to give up bees entirely. Years ago father Langstroth described a similar sensation. It is reasonable to assume that in rare instances some persons are affected merely by the fumes arising from the brood nest. In cool weather bees, as soon as the hive is opened, are apt to elevate their stings, and a careful inspection will show a tiny drop of poison. At such times one may detect, if his nose is close enough, a pungent odor. You say the day was warm; but it was cold enough, judging from the date of your letter, to make the bees show poison-drops. All those who who are thus sensitive to such fumes will probably have to give up bee-keeping entirely.—ED.]

S. L. WATKINS AGAIN; HONEY PROSPECTS IN CALIFORNIA.

Mr. S. L. Watkins has been repeatedly advertised by our State horticultural papers. A number of years ago he did a large business in honey-plants, and also published a paper on horticultural subjects. In our earlier dealings he gave satisfaction; but in our later orders we have received no satisfaction at all. He has run himself out of the plant business.

The honey prospect is most excellent. We have had an April rain of $1\frac{1}{2}$ inches. Black sage is in full bloom in the coast region. White sage will commence blooming in about a week. G. M. HAWLEY, Pres. of San Diego Honey Producers' Ass'n, El Cajon, Cal.

[The Jenny Atchley Co., of Beeville, Tex., sent queens to Mr. Watkins in exchange for oranges. The bill of lading, says Mr.

Atchley, came, but no oranges, and the railroad company can not find any record of any shipment. It is evident that Mr. Watkins needs a little more "free advertising," and we are quite willing that he should have it.—ED.]

A BOTTOM-BOARD BEE-FEEDER THAT DOES AWAY WITH OPENING THE HIVE FOR POURING IN FEED, AND PREVENTS ROBBING.

I have been using a feeder for some time which I consider ahead of any other I have seen, and is to be used with the Dovetailed hive and Danz. bottom-board, deep side up. It is a tin pan 16 inches long, 11 inches wide, and from $\frac{1}{2}$ to $\frac{3}{4}$ inch deep. It is better to have a wooden rack or frame in the pan for the bees to crawl on while feeding.

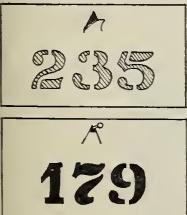
Having the feeder ready, go to the rear of the hive that needs feeding, and pry the body off the bottom-board, and drive up the bees with smoke. Then tilt the hive forward; and if there is any burr-comb on the bottom of the frames, remove it. Place the feeder under the hive in the rear end of the bottom-board and slide the hive forward so as to leave a space for pouring in the syrup. This space is afterward covered with a stick.

The bottom-board should be nearly level when feeding. When the pan is placed in the hive it can be left any length of time. It is excellent for fall feeding.

Kegg, Pa.

GEORGE MCVICKER.

A METHOD OF HANGING HIVE-NUMBER TAGS.



A. Next bend down the central tongue and cut off a little of the point so that, when it is bent back, it will leave just room for a small nail and still not allow the head to slip through. This is a handy device for those who desire to change hive-numbers quickly in the hurry of the swarming season.

JAMES ROAT.

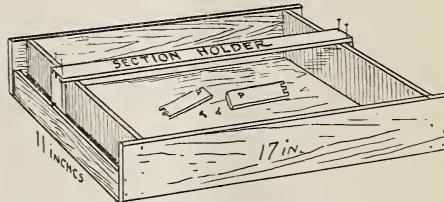
Canandaigua, N. Y.

[When I first read this over I wondered why friend Roat did not use a round punch in cutting the hole through the number-tag. Then it occurred to me that a V-shaped hole could be made with any cold-chisel; and when the hole is made the tag will hang to the nail better; i. e., the angular hole will not permit the tag being blown off as readily.

The scheme of using number-tags is getting to be quite common; and numbers in connection with the card index or a book give one a very nice and satisfactory history of a queen or colony. In the rearing of high-class queens it is *the* way to get at the pedigree. Records on slates are apt to become illegible; and, what is worse, sometimes some child may innocently displace or run away with the slates.—ED.]

A HANDY DEVICE FOR NAILING UP SECTION-HOLDERS.

I send you herewith a description and drawing of an arrangement which I find very handy in putting together Danz. section-holders. It is made in the shape of a box 17 inches long. It can be any width; but if made 11 inches wide it will just hold 8 section-holders at once. The end-pieces are a little less than 5 inches high, and are set in a full half-inch from each end. On the bottom, at the ends, are nailed pieces about $1\frac{1}{2}$ or 2 inches wide. But these should not come up far enough for the hanger-pins to rest on them. This makes a little space $\frac{1}{2}$ inch wide to hold the end-pieces of the section-holders, top ends down, dovetailed ends up, and hanger-pins out. To



use I put 8 end-pieces in each end of the box. Then lay on the bottom-bars, and drive them to their places, and nail. The hanger-pins should be put into the end-pieces before putting together; but before driving them in I take a good sharp $\frac{1}{2}$ -inch bit and counter-sink the holes a trifle so that the heads of the pins will drive in entirely out of the way, so as not to interfere with the sections.

Having the form in the shape of a box makes it very convenient for holding the end-pieces. I throw them into it as fast as I drive the pins into them, and then they are right handy for setting up into the ends of the form for making up. It will hold all the end-pieces which come in a package of five supers.

E. S. WEBSTER.

Hutchinson, Kan.

[Your plan of nailing up section-holders is very good. It would apply equally well to any section-holder used in the various styles of hives put out by any of the manufacturers. Of course, the dimensions would have to be changed to fit.—ED.]

There is not going to be a very big crop of honey. The season is too cold and wet; bees are in bad shape, and are very weak.

W. J. PICKARD.

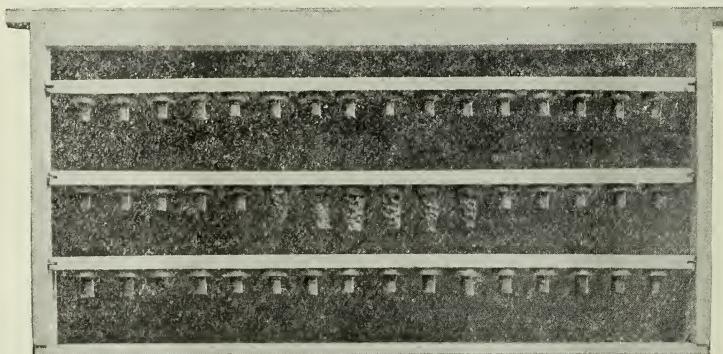
Richland Center, Wis.

QUEEN INCUBATOR AND BROODER; AN ARRANGEMENT THAT ALLOWS THE BEES ACCESS TO THE CELLS AND QUEENS AT ALL TIMES.

One of the greatest objections urged against a lamp-nursery, or any kind of nursery where queens are hatched away from the bees, is that the cells and their inmates are robbed of the actual care of the bees. When the bees have access to a

sticking the base of each cell to a No. 12 gun-wad.

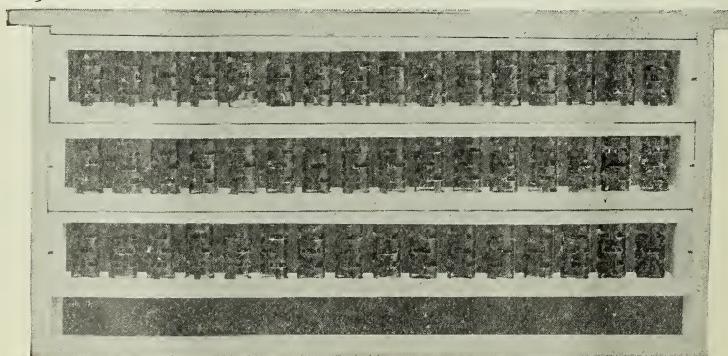
By the use of melted wax, these wads, with the cells attached, are stuck, at proper intervals, to a strip of wood exactly the length of the inside width of a Langstroth brood-frame. Two wire staples driven into the inside of each end-bar slide into slots cut in the ends of the cell-bars, and hold them in position.



STANLEY QUEEN INCUBATOR AND BROODER; CELL-CUPS AND FINISHED CELLS.

cell, and the time approaches for the queen to emerge, the wax over the point is pared down; and as the queen cuts an opening through the cell, and thrusts out her tongue, she is fed and cheered in her efforts to leave the cell. A queen hatched away from the bees loses all of this food, cheer, and comradeship; and, until introduced to

The process of transferring larvae to the cells, getting the cells built, etc., have all been described in the books and journals, and need not be repeated here. When the cells are sealed they may be picked off the bar (still attached to the gun-wads); and right here is where the special features of the Stanley process steps in. Each cell, as



CAGES OF QUEEN-EXCLUDING METAL.

a nucleus or full colony, has not the natural food that she would secure were she among the bees.

All of these objections are overcome by an invention of Mr. Arthur Stanley, of Dixon, Illinois. Mr. Stanley makes the cell-cups according to the directions given in Mr. Doolittle's Scientific Queen-rearing,

it is removed, is slipped into a little cylindrical cage, made of queen-excluding zinc, the cage being about two inches long, and of such a diameter that the gun-wad fits snugly, thus holding the cell in place and stopping up that end of the cage. The other end of the cage is plugged up with a gun-wad. Long rows of these cages, filled

with sealed cells, are placed between two wooden strips that fit in between the end-bars of a Langstroth frame, and are held in position by wire staples that fit into slots cut in the ends of the strips. To hold the cages in their places, holes a trifle larger than the diameter of the cage are bored, at proper intervals, through the upper strip, thus allowing the cages to be slipped down through the upper bar, until their lower ends rest in corresponding holes bored part way through the bar.

A frame full of these cages, stocked with cells, may be hung in a queenless colony, and will require no attention whatever, except to remove the queens as they are needed. The workers can freely pass into and through the cages, cluster upon the cells, care for them, and feed the queens after they hatch, exactly as well as though the queens were uncaged.

These cages are unsurpassed as introducing-cages, either for fertile or for virgin queens. The bees are not inclined to attack a queen in a cage to which they can enter, yet they can surround, caress, and feed her. They can become acquainted with her, and give her the same scent as themselves. When desirable to release her, one end of the cage can be stopped with candy, and the bees allowed to liberate her by eating it out.

By putting food in one end of the cage, a queen may be kept caged, away from the bees, the same as in any other cage.

Flint, Mich. W. Z. HUTCHINSON.

From the Bee-keepers' Review, Jan. 1.

A FOUL-BROOD SCARE; A PECULIAR ODOR RESEMBLING THAT FROM AN OLD GLUE-POT IS NOT ALWAYS AN INDICATION OF FOUL BROOD.

There has been so much written about foul brood that I have concluded to give an experience I once had.

My 16 hives of bees were set up on brick piers as is the custom in this locality. I had a lawn-mower to keep the paths clean; but as the bees were cross when I went too close to the front of the hives the grass was left to grow there.

In August one year there was a very offensive smell all over the yard, and it seemed to be worse when I opened the hives. I studied the A B C book, and decided that it was foul brood. The hives were all full of brood, and it looked flat, sunken, and shrunken, more than I had ever seen it before, and the cappings were full of little holes. It looked like a terrible undertaking to follow the directions given in the A B C for the cure of foul brood; but something had to be done, for the smell, instead of going away, grew worse until it was a regular "glue-pot" smell. So I began, and in two days' time had treated all the hives thoroughly. The next morning I thought I would look at those bees again, for the smell was there just as strong and offensive as ever. I looked into all those hives, and every one of them had begun to make nice

combs, and the queens had begun to lay. I then began hunting to find out what could cause the odor. I first thought it might be a dead chicken; but it did not smell like that. I looked under the house and everywhere, but found nothing. Finally I looked in the thick bushy grass, just under the hive's entrance, and there I found dead bees an inch or so thick all over the ground, and that was what smelled so. After that, in spite of the bees' crossness, I cut all the grass away with a sickle, and put wood ashes in front of every hive, and I never had any more foul brood.

Now, it may be possible that other people make mistakes about this business, the same as I did. If this should be a help to any one I shall be very glad.

MRS. C. A. STEBBINS.

Broad Creek, Va.

[I have read carefully what you have to say, and I am not so sure that you did not have foul brood. The character of the cappings would indicate that you had something very much like it, or perhaps equally bad—black brood; and the treatment you gave was just the one that should have been given, and you gave it none too soon. I am well aware that dead bees do very often smell like rotten foul brood; but I should conclude it was only an incident that they happened to be there. Foul brood must be pretty bad indeed to be detected by its odor within the immediate vicinity of the infected hive.

There is one symptom that you failed to give, and a very important one. If that were present you might rest assured you had foul brood without doubt. That symptom is ropiness. If you found the dead matter, when you stuck a sprig of grass or a toothpick in it, would draw out like glue or molasses, you might be sure it was foul brood, for there could be no question about it then. In the presence of the other symptoms you have named, if the dead matter did not rope, then you may have had black brood. In either case, you should have administered the treatment you did. Even if you had only pickled brood you would be on the safe side.—ED.]

NORTHERN MICHIGAN AS A HONEY LOCALITY, ETC.

Would it pay to go to Northern Michigan to better my location? What county would be best to get the willow-herb in? Do you think the difference in the season would cut any figure?

W.M. ORT.

Pawpaw, Van Buren Co., Mich.

[Friend O., your first question is hard to answer, as I do not know what your present locality is for honey. At the recent convention at Bellaire, Antrim Co., it was stated that the largest crops were secured in that part of Michigan. Willow-herb is found all over those northern counties, and so I can not say which is best. A large part of Leelanaw Co. is now, however, cul-

tivated and cleared for growing potatoes; and there is not as much wild land (where willow-herb is found) as in some of the other counties. One of the speakers at the convention thought raspberry was of more value than willow-herb. He said the timber had been cut off so as to leave about 80 acres close by his apiary that was almost covered with wild red raspberry; and as the period of blooming and ripening is much longer than further south, he said it yielded honey more or less for six or eight weeks. The seasons are shorter in Northern Michigan than where you are, unless it is close by the lakes or other bodies of water. This tends to make the falls later than in the interior of the State. Our own apiary of two hives secured, last season, honey from early in the spring until up into October, and I do not think there was a single day when honey would have been disturbed if left on the tops of the hives. Of course, I did not get a very large yield, for I did not give them very much attention. That thousand bushels of potatoes kept me too busy, and I was not trying to see what could be done with the bees. I would advise you or any one else who contemplates making a change of locality to take a trip first and visit the bee-keepers in the vicinity where they had thought of moving.—A. I. R.]

WHY HOLTERMANN'S FERTILIZING-TENT DID NOT WORK.

I have read with interest Mr. Holtermann's article (p. 94) concerning the fertilizing-tent that he erected last season; also your and Dr. Miller's comments on the same, in different issues of GLEANINGS since.

Somewhat it seems that both you and Dr. Miller have failed to suggest a remedy for Mr. Holtermann's trouble, or guess the cause of his failure. In the first place, I will say that Mr. Holtermann expected his queens to do a very unnatural thing—that of taking their wedding-flight from an entrance that was entirely unused by the worker bees of her nucleus.

Instinct seems to teach the queen that the future welfare of the colony depends wholly on her making this trip in safety, and in rare instances will she depart from her hive through any but the entrance that is used freely by the other bees (workers and drones) of her colony. This is why, I think, in Mr. Holtermann's case, the queens put forth all their efforts in trying to pass the guarded entrance, and not because they were attracted there by the noise of the bees in the apiary, as he rather intimated. If you will turn to Mr. Holtermann's article you will find that he used a separate hive for his queens and drones.

This I would not do. Arrange it so that each nucleus will have quite a quantity of drones. By allowing the drones to fly from the nucleus at the time of day the queen is expected to take her flight, the entrance that led to the inclosure will be used almost

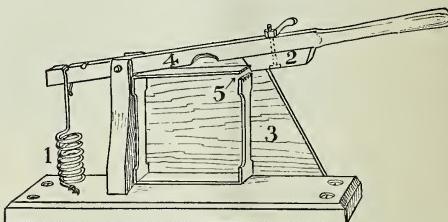
as freely by the drones as is the guarded entrance used by the workers. Therefore the queen will have no choice of entrance. If I could not arrange to have drones reared in the nucleus I would supply the necessary number by trapping them from my choice drone-rearing stock, giving them to the nucleus a few days before the virgin queen was expected to come forth, and allow them to fly, for a short time each day, through the entrance that led into the tent.

ALMOND WEAVER.

Nicklow, W. Va., Mar. 6.

A HANDY SECTION-PRESS.

I am using a section-press like the one here shown. I have used it for about ten years for thousands of sections. It works to perfection. It can be used more rapidly than any other press I have seen. No. 4 is a lever by which the section is compressed; 2 is a movable wedge, this to be moved only



at slight variation of sections; 5 is the dovetailed end of section; 3 is a board at the back to which the section is held with the left hand while being compressed. Fig. 1 is a spring by which the lever is always held open.

Do you think there would be a demand for the machines? And could it be patented?

ANTON G. ANDERSON.
Council Bluffs, Iowa.

[The principle of this press, while very good, is quite old. We illustrated one very much like it in 1879. Its general design is simple, and any mechanic can make one.—ED.]

SMOKER FUEL; ASHES AROUND HIVE-ENTRANCES.

What is the matter with cotton rags to burn in smokers? I find coal ashes make an excellent stand for bees. Raise the hive about 6 inches; make a nice door-yard in front with the ashes well packed clear up to the entrance. It's the best thing I find to keep away black ants.

REV. J. W. WILSON.
E. Springfield, Pa.

[Cotton rags are excellent, but too expensive. Rotten wood, punk, peat, planer-shavings, sawdust, dry leaves, or any combustible material, cheap and slow-burning, may be used. As a rule we prefer to have excelsior or planer-shavings. Get a barrel or two, and keep them in a dry place, and

you will have fuel enough to last a whole season, even if you have a large apiary.

Coal ashes make an excellent bedding for entrances. They keep down the grass, pack well, but I did not suppose they would also keep off the ants. In a large yard the cheapest and easiest thing to put up is a rough $\frac{1}{2}$ board about 8 by 10 inches. Run it up against the entrance, or attach it to the hive. When the lawn-mower is run through the apiary, lift the board up, cut the grass down, and replace the board. The trouble with coal ashes is that weeds and grass will in time push up through them.—ED.]

GLEANINGS, FROM COVER TO COVER, ALL GOOD; SMALL SECTIONS FOR SOUVENIRS.

You request the readers of GLEANINGS to state which department is most appreciated. Well, now, I shall be obliged to decide that "I don't know," just as does Dr. Miller when he doesn't know. When I get GLEANINGS the first thing I do is to run my finger down inside the wrapper, and "off she goes;" glance at markets, advertisements, and settle down to business on "Stray Straws." I'm always sorry when they are finished; and so I continue clear through to the other cover, always feeling sorry that each department isn't longer. I could get my dollar's worth from any one department, without the other departments at all, though that would be like a hungry man at a banquet with only one short course, with an appetite and digestive capacity for a full meal.

It seems some people read GLEANINGS as some people eat a meal—"eat the best first, and so have the best all the way through the meal." Well, that's all right; but I should be afraid of skipping a "course" somewhere which would contain a good deal of the digestive elements to go with the rest, just as was that last "course" called "Toast" at the bee-keepers' banquet at Denver last fall. That reminds me of the honey served there that evening. Can you tell me from what plant it was produced? at what price you could furnish the sections (those souvenir sections)? I think of producing sufficient honey in similar sections for a treat at our farmers' institute next winter.

I hand you a program of a session held last month at our town. You will notice on the third day's dinner I put up the hon-ey, and they relieved me of 93 lbs. (comb). Hull, Ia.

F. W. HALL.

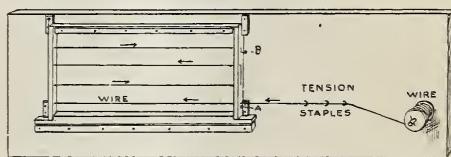
[These very small sections could not be made for less money than the regular standard goods. While the material will be very much less, the labor of adjusting machinery adapted for the larger sizes would be enough to offset the difference in cost of material.

Perhaps you are as eager to get information on the subject of bees as I am to get hints on handling automobiles. I read my two journals, devoted to that subject, from

cover to cover—even all the advertisements. But the first thing I dive after is the department of questions and answers. If I ever get to be a veteran in the horseless business I suppose I shall be able to pick out articles here and there that will cover departments of knowledge entirely new to me. The small-section honey to which you refer was produced in Colorado; when or by whom I don't know.—ED.]

CARR'S METHOD OF WIRING.

After reading "a simple method of wiring frames," on page 247, I made a similar wiring-board; but instead of using two nails under the top-bar I use a $\frac{3}{8}$ -inch strip the full length of the top-bar, nailed to the board; also nail a thin strip like a bottom-bar to the board for the narrow ends of the end-bars to rest upon, and one at each end of the frame to prevent end play.



Instead of five nails for the tension I use three staples; also two staples inside of the top-bar, driven into the board. I like the end-spaced frames, and it seems strange that any one would do without them after giving them a trial. I first used them in 1897, and have since added them to all of my old frames. I also use two of the staples in each hive-body to make a bee-space between the wall of the hive and the first frame.

The plain division-board, as now made by the Root Co., is as near perfection, it seems to me, as can be. I use one in each hive-body on the side opposite the two staples mentioned, and always work from that side of the hive.

H. M. CARR.

Cranfills Gap, Texas.

HOW TO PLACE HIVES IN THE CELLAR IN SUCH A WAY THAT THE DEAD BEES ON A NAILED BOTTOM-BOARD WILL BE NO HINDRANCE.

On page 948 F. B. Cavanaugh asks about putting bees in a cellar with tightly nailed bottom-boards. The answer says that if that is done you should clean out dead bees occasionally with a crooked wire. Now, it happened that I got hold of many Langstroth-Simplicity with tightly nailed boards in trying to winter in different positions. I finally got to putting the front end three or four inches higher than the back end, with the front toward the wall, and it was all right. Bees dying in the hive during winter work toward the rear end of the hive, and all goes well so far for winter. I have put in between 300 and 400 in over 20 different cellars, always the front end at least two inches higher, and I would not

give 5 cts. per colony to have them insured to be all right in spring if the cellar will winter potatoes without freezing or sprouting too much. I have had cellars with two feet of water in a part of the winter, and never less than four inches; and seldom is a cellar so I can not make a mud ball from the bottom. Get the temperature right for potatoes; arrange your hives in a perfectly dark corner, as stated above, and go to California and spend the winter, and your bees will be all right next spring.

Meckling, S. Dak. THOS. CHANTRY.

CHEAP AND EFFECTIVE ADVERTISING; THE VALUE OF RUBBER STAMPS.

While looking over GLEANINGS I notice on page 321 an article from J. M. Young in regard to using a stamp on every thing he sends out. I wish to say that I have been using this method for marking my honey-boxes, also my shipping-cases. I put my name on each and every section taken from the hives that are suitable to put on the market. I also put a label on each one of my shipping-cases besides the stamp, and I find that, by so doing, I have been able to build up a pretty good trade; and wherever any of my honey has been sent they always want more of it. I put it up as nice as I can, and find that I make no mistake by so doing. I get from 12½ to 15 cts. per section for it. C. H. PETTENGELL.

Long Island, Kan.

A UNIQUE PLAN FOR GETTING RID OF ANTS AROUND A HIVE.

I saw in GLEANINGS, a short time ago, where a party asked how to get rid of ants. My way is sure death. I take a medium wide smooth board; nail a cleat on one side at each end. Then take honey or molasses and stir in Paris green or any poison; then put some in the center of the board at the side of the cleats; then turn this side down near the hive. The ants will get their fill and die. The bees can not or will not go under to get poison. This works well with me. S. D. BUELL.

Union City, Mich.

[Your plan is excellent if the bees will let the poisoned sweet alone. I should suppose that they would help themselves to the same dose, especially during a honey-dearth.—ED.]

DRIVING AWAY ANTS WITH CUCUMBER PEELINGS.

One of Miller's last Straus is one advocating the use of camphor to drive away ants. Now, you may smile when I mention an old Scotch remedy, and an effective one, too, in the use of cucumber peelings or rinds. The lasting qualities are better than camphor, and much cheaper; and I don't see any thing in the substance that would hurt bees. Try it and note the result. R. V. MURRAY.

Cleveland, Ohio.

MOTH-BALLS FOR COCKROACHES.

May 31st, 1902, W. W. Cozart, of North Carolina, asks for a way to exterminate roaches. If he is troubled with them as I have been he will use moth-balls, and place them where the vermin huddle, which is on top of the hive or under—on top when a false cover is on. Said balls cost 10 or 12 cts. per lb. I find here at the South that roaches are very destructive to bees, as they will eat very many. J. H. ALLEN. Box Elder, Va., April 18.

STORING EMPTY COMBS.

I expect to have quite a large number of empty combs on hand this summer. Will you please advise in GLEANINGS of a good way of keeping them other than placing in hives over or under bees?

Ben Avon, Pa.

BEN AVON.

[Combs taken out of hives in the fall may be stored in moth-proof and bee-proof boxes, or stacked up in empty hives, also moth-proof. But if the combs have been exposed in the mean time, away from bees where the moth could possibly get at them, then it would be necessary to fumigate them before putting them in closed boxes.—ED.]

SUBSTITUTING ALSIKE FOR RED CLOVER.

Would it pay to go to the expense of sowing alsike clover if you had an unlimited pasturage of red clover? G. W. BRAMEL.

Millersburg, Ky.

[If you can get the farmers in your locality to substitute alsike for red clover as a matter of experiment on their part, you furnishing the seed free, I would advise you to get them to do so if you can. Whether you do or do not, it would be well to try alsike in a field of your own. Alsike would yield honey a week or so before red clover, and would prolong your honey crop just that much.—ED.]

A GOOD LOCAL CONVENTION.

We had a very successful convention of bee-keepers at Moberly on the 22d and 23d inst. Several parts of the State were represented by prominent men, and we effected a permanent organization, and listened to quite a number of splendid bee talks. We fixed the initiation fee at 60 cts. for new members who may desire to join between now and our next meeting, after which it will be \$1.00. We now have 67 names on the roll. We expect to meet again some time in December. W. T. CARY, SEC.

Wakenda, Mo., Apr. 25.

SULPHUR FOR BEE-PARALYSIS.

I tried the sulphur cure for bee-palsy. It cured the disease in a few days, but killed all the open brood in the hive.

E. D. HOWELL.

New Hampton, N. Y., April 20.



Let us not be weary in well doing; for in due season we shall reap if we faint not.—GAL. 6:9.

I have told you the circumstances of friend Martin's death; but I have not said much in regard to some things that transpired after his death; and, indeed, many of the friends concerned will feel like objecting to some things I am going to mention; but as there are several moral lessons involved, I wish to beg their indulgence just a little.

Mr. Martin, when he recognized that death was near, made a request that his body be sent to his old home in Hartford, N. Y., for burial. It is not at all probable that he knew how expensive such a proceeding was going to be; and, in fact, nobody seemed aware it would cost \$400 or \$500. There are some customs and regulations in Cuba that we Americans do not understand very well. I shall not attempt to go into the particulars, more than to say that the embalming process in Cuba is very expensive. Then there are certain rites and time-honored customs, that I believe belong to the Roman church, that are not yet overruled or set aside.

After Rambler's death, none of the American bee-keepers felt like taking the responsibility of advancing the money to have his request carried out; and, in fact, our good friend Mr. de Beche was perhaps the only friend and acquaintance of Mr. Martin who knew enough of the Spanish laws and customs to be *able* to do this; and when he made inquiries he was informed that, unless he commenced proceedings at once, it would be an impossibility to get Mr. Martin's remains until they had been in the Roman Catholic cemetery two years. At the expiration of two years the remains could be taken up and carried away at an expense of only about \$20. After Mr. Martin's death some sort of paper was found—I do not know exactly whether it was a will or not—but this paper mentioned that he had a \$1000 life-insurance policy, and he directed that enough of this be used to pay the expense of sending his body to his old home; and the remainder was to be used in purchasing an appropriate tombstone. After seeing this paper, Mr. de Beche decided to advance the money from his own pocket, especially as the authorities would not grant him any time to confer with Mr. Martin's relatives nor even with the bee-keepers on the island. I was, as I have told you, 60 miles away at Paso Real. Mr. de Beche wrote me what he had decided to do; but as I expected to see him in a few days, I am afraid I did not take the trouble to write him that I approved of his undertaking, and would see that he did not lose by coming forward at such a time in such a generous way. I *felt* this; but, as I say,

I neglected to give him a word of encouragement. I do not know what the American bee-keepers, the friends of Rambler, did. My impression is we all just let Mr. de Beche go ahead.

Some little time after the body was sent away I received a letter saying the writer held the life-insurance policy alluded to in his will, and asked me to assist in recovering the money. Immediately after Mr. Martin's death, Mr. de Beche visited the American consul, and gave him the circumstances of Mr. Martin's decease. If I am correct, it devolved on the consul to appoint an administrator. When informed that Mr. de Beche had advanced this sum of money, the consul seemed to turn it off in a sort of indifferent way, and there the matter dropped for some time. Mr. de Beche wrote at once to Mr. Martin's friends, to whom the body was to be consigned, telling what he had done; but weeks passed, and he received no word of encouragement—not even a brief letter thanking him for advancing money to carry out Mr. Martin's wishes. Everybody seemed indifferent in regard to the matter. Somebody said the Rambler left an apiary and some property in California, but nobody could tell any thing about it. According to strict law (if the matter should get into the hands of lawyers) it looked a little as if our good friend Mr. de Beche might not get any thing (not even thanks) for the time and money he had given. Of course, he relied on the will; but I showed him the letter, which seemed to indicate there was a possibility, and even a probability, that nothing would be got from that source.

My good friend, did you ever in your life do some generous act for somebody else, prompted by the best spirit in the world, and later on have your own friends turn around and criticise you, and may be say mean things about you for this very thing? I have had just such experiences. After giving my time and money in trying to bring out good, and nothing but good, some spirit of the evil one has slipped in and suggested to my friends and neighbors that I was prompted only by selfish motives—that I had an ax hidden away somewhere that I expected to "grind" by the operation. Now, I hope the Cuban friends will forgive me when I say that in some strange way (nobody knows how) the report got out that Mr. de Beche was going to make a *good thing* by promptly handing over all this money to pay for removing the body. I do not know but it was intimated that it did not cost between \$400 and \$500; and it was even said that the large crop of honey Mr. Martin produced was all sent to Mr. de Beche, and nobody knew what had become of it. As soon as I heard any thing of this sort I promptly replied that, even though Rambler *did* ship his honey to Mr. de Beche, it all went to The A. I. Root Co. to be applied on an account for supplies, etc., he had bought of us. I furthermore rebuked these stories by saying that both

Mr. de Beche and the Root Co. did business in such a way they could at any minute show the figures in black and white for every copper they had received or expended, or for every bit of honey or wax that had been trusted to their care. I rebuked those who were inclined to listen to such stuff, telling them it was childish folly. But I could not see everybody. Let me digress a little.

Shortly before Rambler's death he employed a young man by the name of Gilson. I formed his acquaintance when Mr. Stephen Green, of our office, and I made a trip from Paso Real to Rambler's apiary to get some kodak views of it. Mr. Gilson was out in the woods—or perhaps you may say swamp—hard at work with his bees and honey. He was surrounded by those who spoke only Spanish, and knew very little Spanish himself. No wonder he became lonesome after his employer's death. I shall always remember with what a glad boyish smile he welcomed us. I proposed a trip to the mountains, only a few miles away. Both boys felt a little uncertain as to whether they could conscientiously take the time to go, until I told them I would be responsible for at least *one* day's vacation. We mounted our wheels and started off in high glee. Young Gilson soon performed such tricks over the rough Cuban roads, in difficult wheel-riding, that I asked him if he was not a professional "trick rider" on the wheel. He seemed pleased to receive the compliment. And what fun we had, especially when we reached Mr. Young's apiary, and got him to join with us! The boys pulled off their coats and vests, gathered pebbles on the shore of the river, threw at marks, skipped stones on the water, until it made me think of schooldays, and the time when "school was out" in the afternoon. I have not space here to tell you all about our mountain-climbing; but before night I had formed a very favorable opinion of my three companions. During that acquaintance Mr. Gilson informed me that he had no money at the time of Rambler's death, and had received none since, having made no sales of honey nor any thing else; that he had been running up accounts at the store at Taco-Taco, waiting for some orders to be given by the American consul at Havana. He asked me what he had better do. He showed me a letter he had received from Mr. de Beche, advising him to bring to the city some honey he had on hand, and get permission from the consul to sell it. I told him to do exactly as Mr. de Beche directed him. Now, friends, please do not criticise my young friend Gilson, nor say any thing hard about him, when I tell you that, hearing of these things I have mentioned above, when he got to Havana he went direct to the office of the consul, without visiting Mr. de Beche. He told me, some time afterward, that the consul seemed to be too full of business to listen to a boy. Finally he turned on him briefly and made a speech something like this:

"Mr. Gilson, if somebody left in your charge a lot of chickens, and by some accident did not get back as soon as he expected to, would you let the chickens starve to death, or would you feed them?"

Mr. Gilson told him, of course, that he would feed the chickens.

"Well, now, it is just the same with those bees. You sell enough honey to get what you need to take good care of the bees until you get further notice."

You see the consul did not appoint Mr. Gilson as administrator or manager. He did not give him any document or paper of any sort. He simply told him to sell honey enough to get funds to pay running expenses and let it drop. I can not now explain why Mr. Gilson did not go and tell Mr. de Beche what the consul said; but, boylike, he jumped on his wheel and put off for home.*

I happened to go into Mr. de Beche's office the very morning after he had discovered that Mr. Gilson had been to see the consul, and gone home without meeting him. I suppose my good friend Mr. de Beche will scold when he sees this in print; but I want to say to the readers of GLEANINGS that he is one of the most generous, whole-souled, energetic, go-ahead business young men I have ever met. When our bees landed in Cuba, and the custom-house officers were going to endanger the lives of the colonies by "red tape" routine after they had got thus far, Mr. de Beche showed his business ability better than any Yankee could do. In fact, I am not sure we have any Yankees that could equal him. He talked Spanish, French, and American to the different officials. Then he took off his coat, and carried more hives of bees from the boat-landing to the railway than any other man, American or Cuban. Not satisfied with this he went to Paso Real and worked all night in unloading the bees. He got out the Spaniards with their ox teams, and made them work in the night when they did not want to; and when they were going to charge about four prices for their services he coolly informed them they were not dealing with an American. He told them that he was a Spaniard, and knew their tricks; and he paid them reasonable prices for their work, and would not give them any more. I never saw Mr. de Beche, except once, when he was not a smiling, jolly, good-natured fellow. By the way, he is as spry as a cat; and when he is going through the narrow streets of Havana, turning corner after corner, if you get your eye on him you have got to be pretty smart to keep him in sight. Well, on this morning in question he did not look quite happy. He told me something of the

* Of course, Mr. de Beche did not know this. He only ascertained that Mr. Gilson had been in Havana, had been to visit the consul, and had sold some honey. As we talked it over, it looked to both of us at first as if the consul might have appointed Mr. Gilson administrator, and authorized him to dispose of the apiary should he see fit. On further reflection I was satisfied this could not have been done.

way things were going. He said he had paid out all this money, and had not received a word of thanks from anybody. No one had volunteered even a part of the expense—that is, if Mr. Martin's friends in York State should not approve of the course he had taken. I hastened to apologize for my neglect in the matter, and told him I had been ready to stand by him ever since Mr. Martin's death, but had been backward in saying that our company would see that he did not lose by what he had done. Then I attempted to excuse my young friend Gilson. Said I, "Mr. de Beche, when he comes to think it over I am sure his conscience will trouble him so that he will come back and apologize, or write you a letter."

"Mr. Root, I do not want to see him. I won't see him. If I see him coming on the street I will lock the door. If he writes me a letter I will burn it up without reading it. I shall go at once and get a lawyer. I will put the matter all in his hands. I will be placed fairly before the world, even if it costs \$500 more, and I won't care either. I have wasted money before in that way, just because I was foolish and trusted to other folks to stand by me."

Of course, the above are not Mr. de Beche's exact words, but it was something in that line. I give it as nearly as I can remember. I said, "Mr. de Beche, you are excited now. I know you have just grounds for complaint, but I beg of you to wait a little. Wait till next Monday."

"No, I can not wait an hour."

Then he got up to go out. I put my hand on his shoulder, and, laughing at him, told him he must wait till I had told him a little story. And by the way, good friends, I think you may hear the story too, if you will listen. It has a moral to it.

A. I. ROOT'S STORY.

"Some time ago there lived in Matanzas a millionaire who had invested very largely in the sugar business. You may remember a time when sugar was very low. It went so far down that everybody thought it could not possibly go lower. This millionaire kept buying with the expectation that it would soon go up. He invested every thing he could get hold of. He borrowed money of his friends, and persuaded other friends to go into it. But sugar still kept dropping. Finally it got to a point where it would make him a financial wreck. In just a few hours his speculations (or gambling, I suppose it was, to call things by their right name) would come out before the world. The means which he had used to get others in with him in this matter were soon to be brought to light. Ignominy and disgrace stared him in the face. He took a revolver and blew out his brains. Satan had got hold of him—had got into his heart, and persuaded him that he had better die than face the disgrace. But in just eighteen hours after his death sugar made a big bound upward; and had he been patient—had he restrained himself from that wicked

act, and said, Get thee behind me, Satan, he would have been able to meet all liabilities, to restore every copper he had taken that did not justly belong to him—yes, and he would have been a millionaire still, with opportunities for doing a vast amount of good with his great wealth."

I paused in my story, and looked smilingly into the face of my friend. His countenance had been gradually softening, and there was a quizzical expression on his face as he said, "Why, Mr. Root, you do not suppose that I am going to commit suicide, do you?"

"No, I did not think you were going to do that—God forbid; but I did fear you were going to do something that you would afterward much regret."

"Well, Mr. Root, you know just how this matter stands. You know how I have waited weeks and weeks, without getting a word of encouragement from anybody, and you see how it turned out. They are even accusing me of appropriating Rambler's hard earnings."

"Do you want my opinion as to what you should do? It is this: 'Be not weary in well doing, for in due time you shall reap if you faint not.' And meanwhile you just let this matter rest till next Monday morning. You will promise me that, will you not?"

He did not give me any promise; but the way he smiled when he took off his coat and sat down to his desk made me feel that I had won my point. I went up to him and said, "Now look here, my friend, don't consult a lawyer, nor do any thing in this matter, until you see me again. I will get back some time next week, just as soon as I can."*

I went to my room, put on my light Cuban suit, and put my wheel in order for a long ride; but I shall have to tell you the outcome of that ride in our next issue.



CUBAN BEE-KEEPERS AND CUBAN APIARIES.

I did not get any further east of Havana than Cardenas; and I had a very pleasant visit there with Mr. J. B. Hamel. Cardenas is more modern in its make-up than most of the towns in Cuba. It has beautiful broad level streets, all running at right angles—no diagonals nor wedge-shaped blocks. Right in the center of the town there is a beautiful square with exotic plants, and in the center a very fine piece

*After Mr. de Beche had heard my story he remarked that he presumed he knew more about the affair than I did, for he was employed at the time to assist in settling up matters after the death of the millionaire. When I asked if I had got my story correct, he said I had it substantially so.

of statuary representing Christopher Columbus.* Mr. Hamel is rather more of a dealer in honey and wax, I take it, than a bee-keeper. At the time of my visit I think he felt a little troubled because the price of honey was so low, and he had such an immense stock of it in his spacious warehouse. As the price went up a little afterward, however, I presume he disposed of it without loss. His apiary was only a short drive out of the city. The hives were scattered about in the shade of some of the great tropical fruit-trees and royal palms.

Of course, I was specially interested, while in Cuba, in the "homes" of the people. Round about Paso Real, and throughout the country generally, I felt greatly pained to find so many homes destitute of the comforts of life. Many of the friends told me the good homes were destroyed and burned during the war; and as the people were poor, and oftentimes almost entirely destitute, they were getting along with any sort of roof over their heads until they could build better homes. For some reason the city of Cardenas seemed to have escaped the destruction during war times. The home of friend Hamel is not only one of the finest that I visited in Cuba, but I think I may say it is one of the finest in all its appointments I ever saw anywhere. It reminded me of the stories I had read of Oriental luxury—of the palaces described by Ben Hur so vividly, etc. Friend Hamel is the happy father (or ought to be) of a goodly number of handsome young ladies. I think there is only one son. Some of them spoke enough English so I passed a very pleasant evening. In the way of a well-spread table, the evening meal I was asked to share with them equaled any repast I ever before partook of. Not only was there most of the dishes I was acquainted with, but a good many of them I had never tasted of before. I asked so many questions about the new things I almost felt ashamed of myself. His son is a good deal interested in gardening, and is busy just now in testing different fruits and vegetables from the North to see what will and what will not grow in Cuba.

Speaking of his accomplished daughters reminds me that, when I got in a strange place, and could not find anybody who could talk English, I almost always found some *good woman* who could not only sympathize with me, but could get me out of my trouble. It brought to mind very vividly poor Rambler's experience when inquiring

the way to Marianao, when "a petite jewel of a woman took interest in the matter." See page 330 of last year. On my way from Cardenas back to Havana I heard some of the passengers speak of Güines; and when we arrived at a station where there is a branch road, several got off to take the other road to Güines—at least I gathered this from the conductor. Now, I wanted to visit Güines; and although I had a ticket back to Havana, I thought if it would save me very much time I could lose the value of my ticket by taking the branch road. First, I wanted to know how long I would have to wait at that station to catch the train for Güines. I went clear through the car, asking the passengers if they talked English. I showed my ticket, pointed to my watch, etc. They all seemed very anxious to help me; and some of them, especially the women, seemed distressed to think they could *not* help an unfortunate foreigner out of his perplexity. By the way, I do not know exactly why, but it has seemed as though the feminine portion of creation always sympathizes with me, even when those of my own sex do not care whether I am in trouble or not. On this particular occasion a very bright and pretty young woman indicated to me by her looks that she knew what I wanted, and seemed anxious to help me, even though she was not ready to admit she could speak English; and you know it is not always exactly the thing to do, for a young lady traveling alone, to be too familiar with a stranger, even if he *is* in trouble. I finally approached her, raised my cap, and said, "My good friend, I hope you will excuse me when I tell you that I judge by the expression on your face that you can command English enough to give me the information I want. I would not trouble you, but I wish to know, before this train starts, how long I would have to wait here to catch the train for Güines."

She gave me a most bewitching smile, and answered hesitatingly, and with some embarrassment, in a musical voice, "I think—train—Güines—half hour."

I thanked her the best I knew how, and begged her for just one more piece of information. "Now can you tell me about how long I would have to wait at Matanzas to catch a train to Güines?"

She studied a minute, gave me another of her smiles, and replied, "I think—may be—all day."*

* While the very narrow streets in the great city of Havana, where even a square foot of land is worth so much money, may be all right, the new towns in Cuba are being started on a different plan. When one becomes accustomed to those very narrow sidewalks, 18 to 24 inches wide, he gets along pretty well; and, in fact, these narrow streets, with their canvas covering during the hottest part of the day, make it very pleasant and shady, and in some respects a cool retreat that we should not get with wide streets like those in northern cities; but when we consider the electric railways that are pushing into towns everywhere, even in Cuba, it behooves us to start a town on a more liberal scale.

I thanked her again, grabbed my valise, and made a rush for the departing train; but a big woman got in my way with her bundles. The conductor was evidently a little vexed because I did not get on the other train when I had plenty of time, and I had to give it up. The passengers "caught on" enough to indulge in a good laugh at my failure. Very likely they shared with the conductor in wondering why it was I should wait until the train was under way, and suddenly decide to leave the car I was in (with my ticket paid through to Havana, which I had shown to almost everybody in the car), to take the other train.

NATURAL CURIOSITIES; WATER SUPPLY IN CUBA, ETC.

While at Matanzas my good friend Woodward accompanied me on a visit to the celebrated cave of Bellamar. While I do not like to speak ill of any of the people of Cuba, I do not know but I shall have to mention, as a caution, our experience with a coach-driver. My friend Woodward knew where the cave was, but he did not know how far it was from the city. The driver said it was a long way, and that the best price he could make was \$7.00 to take us there and wait till we explored the cave. If I remember correctly we got him down to \$4.00, and thought we had made a good thing. It is true the road was pretty rough, and was rather bad for a horse and carriage; but we could easily have walked the distance in an hour, or perhaps half an hour, if we had hurried up. The entrance to the cave is on top of a stony hill. The charge for a guide to go through it is \$2.00 for a single person; but if there are two persons it is no more for both. The printed notice that was put up did not say this exactly, but we persuaded the colored man who was in charge that that was what it meant; at least, after some banter he agreed to let us follow the guide for \$2.00.

The only method of lighting the cave is by means of huge wax candles, and such light is very inadequate. I should much prefer to give \$5.00, and see the whole interior brilliantly lighted up by means of electric globes; and it would not take a very expensive outfit to do it nicely. The bridges, stairways, and hand-rails all through the cave are put up in a very nice and substantial manner—far better than similar structures in Mammoth Cave, Kentucky—at least, better than when I was there in 1885. For quite a spell you go almost straight down.

but finally read, one after another, some of the short verses. As I write about it, I can hear even now their childish voices struggling to pronounce the English words. Of course, they would give almost every word a Spanish inflection. They would give *i* the sound of *e*, *e* the sound of *a*, etc. But for some strange reason, I can not tell why, the Spanish inflection as above, together with the trilling of the letter *r*, had a wonderful fascination for me. You see I had been working days and nights for weeks at their language, and it gives me a thrill even now to recall those days; and as I write, I long for the time to come when I can *again* listen to the music of those Spanish words, and look into the faces again of the friends in Cuba whom I love.

The stalactites and stalagmites are certainly equal to any thing in Mammoth Cave; but, unfortunately, the smoke from the wax candles has spoiled or is spoiling a good deal of their beauty. The water is so strongly charged with minerals that the whole cave is filled with formations that very much resemble the results of letting water drip or trickle outdoors on a cold wintry day. It looks almost exactly like ice, or better, perhaps, very pure transparent alabaster. In one place there is a waterfall that resembles Niagara, not only in shape, but makes some feeble approach to represent it in size. The mineral water has flown over a vast precipice, and piled up a great waterfall through the centuries past. Many of these stalactites give out a metallic ring when struck; and it would be an easy matter to arrange a stalactite piano, such as they have in the Cave of the Winds at Manitou, Col. The guide frequently struck them to let us hear the musical notes that were given forth.

Before we started down, both the guide and the agent advised us to divest ourselves of all surplus clothing. He said we would find it pretty warm down there, and that we had all better get off every bit of our "duds" that we could spare. As I had on a light Cuban summer suit, I thought I was all right; but before I got to the extreme end of the cave I felt as if it would be just delicious to cast off every bit of my clothing, as many of the Cuban children do when under four or five years of age. The heat oppressed me so that I began to think I would exchange all the wondrous sights the cave had to offer for a breath of fresh air; and when we heard the hackman calling from a spot overhead that seemed to be up among the clouds to us, we hustled past the waterfall that I felt sad to view so briefly. We twisted and bent down, and crawled through interminable passages. There were clock-shelves and mantels, and things that resembled human beings and domestic animals, all carved and polished and colored by Nature's fingers. Every little while you can hear the dripping of water. The caves were discovered within a very recent period, so the guide-books tell us.

Now let me advise visitors to heed the request of the guide to dispense with every bit of clothing they can get along without; and let me say to the proprietors of the cave that, if they want the public to patronize them, they will have to get something better than wax candles. Electric globes would be the thing. And last, but not least, there must be some arrangement to start a current of air. A blower and a suitable pipe to carry air to the furthest extremity, so as to ventilate thoroughly all of these wonderful passages, would make it possible for one to spend an hour or two in comfort away down in the bowels of the earth.

After we got back from the cave (and we were not gone over two or three hours) the

hackman swindled us again. I wanted to see Yumuri Valley. He argued, as before, that it was a long way. After quite a "confab" we paid him half the price he wanted, and then discovered we could have walked it easily. This valley is a great basin, something the shape of a wash-bowl, if you will excuse the illustration. It is entirely surrounded by mountains, and evidently was once an inland lake; but either Nature or some of the early settlers of the island cut a passage through close to the city of Matanzas, thus connecting it with the ocean; and as the tide rises and lowers, the water goes up a little way into this basin, and then back again. I suppose this great bowl or basin is five miles across, and it may be ten miles. The mountains surrounding it produce a kind of illusion (especially in people not accustomed to seeing mountains), so one can not tell whether he is going up hill or down, except by feeling that it is hard work going one way and easy in going the other.

After my first sight of Yumuri Valley (on another occasion) I followed a trail along up the outlet; and the overhanging rocks and spurs of the mountain produced a sort of weird effect that makes one feel queer. Several times I felt like shaking and pinching myself, and saying, "Well, old fellow, where are you, and 'what are you at,' any way?" It was quite a bad road for the cab-driver, and he got his vehicle in the mud a great deal; but if he had told me truthfully in the outset how far it was to the apiary, I should have very much preferred to go on foot. In fact, he had to hitch his horse and let us go on foot part of the way as it was.

Now, you might think being swindled twice by this same man was enough; but I was very anxious to see another of friend Woodward's apiaries, and make it before train time, and the fellow got a big price for going out there and then *not* doing as he agreed to do. Friend Woodward thought he knew these fellows, and knew how to deal with them; but they took so much time in going over the details of the bargain I suggested paying the man his price, to save time. Then after the fellow violated his contract there was going to be more time spent in settling matters. But I proposed again that we get all the good we could in looking over the apiary, and friend W. and the driver settle their differences after I got away. I am sorry to say this about even a poor colored man. But he hires the rig of the proprietor for so much a day, and there are probably a good many days when he does not get hold of a real live Yankee (that has any money) at all. So he has to make the most of his chances when he catches one.

I am not yet through with Yumuri Valley. No wonder Humboldt said, when he stood on the site of the old church (Monserate) on the hill that commands a view of this whole basin, that it was one of the lowest valleys in all the world. It is worth

a trip to Matanzas to get this view; and I declare I do not know but it is almost worth a trip to Cuba.

Now, I must not wind up my Cuba travels without a further mention of the wonderful spring or springs that supply the city of Havana with water. This spring is near a station called Vento. A great aqueduct, almost large enough for a man to stand up in, carries the water from Vento to Havana, a distance of nine miles. This aqueduct and all its appointments were made by the Cuban government, and the work is certainly well done. The great springs of Vento are walled in with a circular piece of masonry rising 60 feet high. On top of this masonry is an iron fence to keep intruders out. It is all kept under lock and key. This masonry is about 200 feet across the top of the circular basin, and perhaps 100 feet at the bottom. The water is not quite soft; but it is beautiful drinking-water. Where it runs over the stones it leaves no sediment nor incrustation. I do not think it even crusts the pipes. The water boils up a great deal like the springs at Castalia, O., or near Lebanon, Mo. The stones on the bottom are variously colored, like the springs I have mentioned. If I remember correctly, a million gallons of water goes to waste every day after supplying the great city of Havana with all the people need for any purpose. Just as the aqueduct starts out from the spring it meets quite a river; and by a sort of inverted siphon the water goes down under this river. Here the Spanish people have shown their skill in hydraulic architecture, if I may use the term. Along the side of the aqueduct that goes under the river is a large tunnel, giving plenty of room for the men employed to care for the waterworks to go back and forth with a lighted lantern. Here the great valves are situated that shut off the water whenever it is desirable to repair or clear the aqueduct; and at short intervals all the way from the spring to Havana there are round houses that permit the workmen to get out of and into the aqueduct, and also to let in fresh air when at work in cleaning or repairing the great waterway.

Perhaps I should caution visitors that one can visit and go through these waterworks only on certain days. My friend Mr. de Beche, however, being acquainted with the officials, succeeded in getting a permit to go through, even though it was not the regular day. This system of waterworks was commenced, I am told, in 1858, and completed in 1878. The river under it is called the Almenderas. About 41½ millions of gallons of water is delivered in the city of Havana daily. The spring is so high above the city that the water goes all over it by gravity. A beautiful stone road, or "calzada," runs out from the city to Vento. The water is of such excellent quality that I, while in the city, for the first time in years found I could drink cold water without interfering with my diges-

tion; but when I was out in the country where water was procured from different sources, I found by experience I should have to take the trouble to drink boiled water; and the simplest way to get it would be to ask for hot water (*agua caliente*). The waiters at the restaurants said many times that, while tea and coffee were constantly in demand, hot water was something that nobody ever called for before, and they looked at me as a sort of curiosity — a human being who preferred hot water to good tea and coffee.

Mr. A. I. Root's Writings

of Grand Traverse territory and Leelanau Co. are descriptive of Michigan's most beautiful section reached most conveniently via the

PERE MARQUETTE R. R.

For pamphlets of Michigan farm lands and the fruit belt, address J. E. Merritt, Manistee, Michigan.

BUY POULTRY SUPPLIES,

where you are assured of high quality. We carry only the best. Everything the poultryman uses, as Incubators, Foods, Remedies, Appliances, etc. Also High Strain Poultry and Hatching Eggs.

Our Poultry Specialists

will answer all inquiries free of charge. Write us freely and ask for free catalog D.

W. J. GIBSON & CO., (Inc.) Union Stock Yards, CHICAGO.
Dept. Mgr., H. M. Horton, Director Nat'l Poultry Association.

Rose-comb Brown Leghorns

8 years breeding and selecting. Finest stock for size, laying, and markings; 15, 75c; 30, \$1.25.

N. E. Cottrell, Fayette, Ohio.



POULTRY PAPER, illust'd, 20 pages
per month, \$2.00 per year. 4 months'
trial 10 cents. Sample Free. 64-page practical
poultry book free to yearly subscribers.
Book alone 10 cents. Catalogue of poultry
books free. *Poultry Advocate*, Syracuse, N.Y.

PAGE

Ever Notice That

we constantly advertise Page Fence for the hardest usage and the worst places? Does anybody else?
Page Woven Wire Fence Co., Box S, Adrian, Michigan.

FENCE! STRONGEST
Tight. Sold to the Farmer and Wholesaler.
Strong, Chicken-wire, Coiled Spring Fences.
Fully Warranted. Catalog Free.
COILED SPRING FENCE CO.
Box 101, Winchester, Indiana, U.S.A.

HIGH CARBON COILED SPRING STEEL FENCE
X INDIANA STEEL & WIRE CO.
CATALOGUE FREE. BOX 509 MUNCIE, INDIANA.

Chicago to Colorado.

New overland service via Chicago, Milwaukee & St. Paul and Union Pacific line. Thro' sleeper and free reclining-chair car to Denver from Chicago 10.25 p.m. daily. No changes nor delays.

Booklets and folder free.

F. A. MILLER, Gen. Passenger Agt., Chicago.
E. G. HAYDEN, Traveling Passenger Agent,
217 Williamson Bldg., Cleveland.



The "Star" Ventilator.

Storm-proof, effective; for ventilating all kinds of buildings, barns, stables, and factories of all kinds. Send for illustrated booklet.

Merchant & Co., Inc.,
Philadelphia, Brooklyn,
New York, and Chicago.
M'nfr's High-grade Bright Tin

Cuba.

If you are interested in Cuba, and want the truth about it, subscribe for the

HAVANA POST,

the only English paper on the Island. Published at Havana, Cuba. \$1.00 per month, \$10.00 per year. Daily (except Monday).

Squab Book Free



Squabs are raised in 1 month, bring big prices. Eager market. Money-makers for poultrymen, farmers, women. Here is something worth looking into. Send for our **Free Book**, "How to Make Money With Squabs" and learn this rich industry. Address

PLYMOUTH ROCK SQUAB CO.,
19 Friend St., Boston, Mass.

Fruit Packages of All Kinds.

— ALSO —

BEE-KEEPERS' SUPPLIES. . .

Order your supplies now before the busy season catches you. Price list free. Address

BERLIN FRUIT-BOX COMPANY,
Berlin Heights, — — Erie County, Ohio.

A Great Buggy Bargain

HOW YOU CAN GET IT.

Cut out this advertisement and send it to us with \$5 at once and we will send you a complete description and large colored illustration of this **SPECIAL ECONOMY IDEAL BUGGY** which we will make to your order, also description of our **Economy Storm Front and Economy Dust Hood**, illustrated below. Your \$5 will reserve you one.

of these Buggies, together with Storm Front and Dust until June 7 for \$42.50

Unit Unit 1,10 \$42.50

Hood.

When you get our catalogue and circulars if you are not satisfied that it is the buggy you want, we will return the \$5 to you. If satisfactory, when you are ready for

Waggons sent us the balance, \$37.50 and shipping instructions.

After the buggy reaches you try it ten days, and if absolutely satisfied with your purchase, return and we will send back every dollar of your money.

This wonderful offer for advertising purposes. H
regular price of Dust Hood and Storm Front, \$5.25
take no chance in sending us the \$5. We are respo

description given herewith.
Dust Hood protects bugs
justable and can be used

on any other buggy.

wide, or Corning style instead of the standard. The height of the frame is 42 inches high with 1/2-in. steel posts. The width of the frame is 36 and 40 or 42 and 44 inches wide.

Bear king bolt fifth wheel.
strength. Bailey body loops
when wanted. **TOP**—Leathes
rubber roof, back curtain and

cloth. Three bow top regu-
sent and back is dark green
ferred. Genuine No. 1 leather
padding. Bedroll or black.

This buggy is furnished complete, including, bow, plain or a crack.

Economy Storm Front Many are making reservations for these buggies. With
with 36-inch shaft leathers, panels carpeted, water-proof

Combination Offer

\$42~~50~~
Regular Price
\$65.25

Regular price

66.26

11

NOTICE. — We are now publishing our new
catalogue, making only Bureaus and Harnesses.

... his top bony roof furnished when wanted. In the "whalebone" he was a terror to all. At Arroyo, "A" had a good record. Bodie can't stand it if an animal with whom he has been closely striped, including storm fronts, as shown in the picture, comes up against him. He has a fine record in the buzzard front, as shown in the picture, and a fine record in the one when down. Finest quality of history shafts

Remember this Offer Closes JUNE 7, 1903.

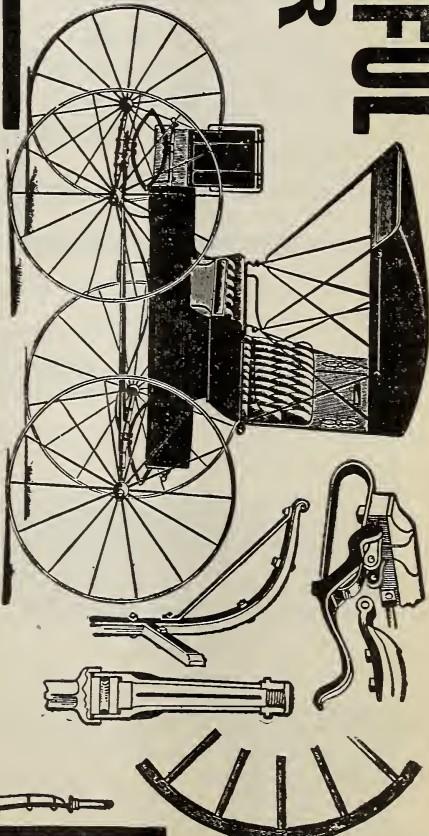
with 36-inch shaft leathers, double braced panels carpeted, water-proof booton the bungs for these buggies. Why not You?

Economy Stom Front
Many are making reservations

A WONDERFUL SELLER

Split Hickory SPECIAL

\$47.50



The reasons why we are having such a phenomenal sale on this particular buggy are easy to see.

First. It is our Celebrated Brand—**SPLIT HICKORY SPECIAL**. (Split, not sawed). **Second.** It has **100 Points of Merit**. (Read some of them given below). **Third.** It is a regular **\$55.00 BUGGY**, sold to the Consumer direct, for only **\$47.50**. **Fourth.** Our fair method of selling. We allow the purchaser to inspect it in every particular that it is the best seen from the standpoint of finish, style and durability, he can return it to us at our expense and not be out one cent in the transaction. **Fifth.** Our ironclad guarantee of two years from date of sale. **Sixth.** We manufacture every buggy we offer for sale in our own factory. You cannot get a Split Hickory from anyone else, as we sell only to the consumer and do not sell jobber or retailer. **Seventh.** You take absolutely no risk in dealing with us, as we make good every one of our claims. The editor of this paper would not permit our advertisement appear if we were not responsible, and **HERE ARE A FEW OF THE 100 POINTS OF MERIT** on this Special Job.

There are many other reasons too numerous to mention in an advertisement.

Wheels, shafts, body and all gear woods, carried one hundred days in pure oil and lead before painted. 36-inch genuine leathers on the shafts. Special heel braces on shafts. Quick shifting shaft couplings. Long distance, dust proof axles. Full length velvet carpet and side panel carpets. Full length steel body loops. Reinforced back curtain. Screwed rim wheels. Longitudinal center spring under the body. Four extra clips on the axles. More than are furnished by anyone else. $\frac{1}{4}$ inch steel tires. Full box frame spring cushion. Solid panel spring back. All wool head lining. Genuine full leather quarter top with genuine rubber roof, back curtain and side curtains. Body, fancy striped or plain as preferred. Gear painted any color wanted. Full silver mountings, without extra charge, if ordered.

We ship the buggy anywhere, to any one, on the free trial plan. **YOU SHOULD WRITE AT ONCE** for our hand-some, new illustrated catalog, which describes every part of the buggy and also illustrates and describes a complete line of all styles of **SPLIT HICKORY VEHICLES** at prices that will save you \$250.00 to \$300.00 on a vehicle. We have thousands of testimonials from customers all over the world who have saved money from buying us. We can save you money and give you a better vehicle than you ever saw before. Try us and see. Write for a catalog today. You will want your buggy soon now. Understand that we will finish it any way you want us to if you order early. Our catalog will post you on prices and styles even if you do not buy of us.

CAUTION Do not confuse us with any mail order house in the country, as we are exclusive manufacturers of Split Hickory Vehicles only, and do not deal with seconds or picked up jobs. Every vehicle we sell is made in our own factory.

Incorporated under the Laws of Ohio.

THE OHIO CARRIAGE MFG. COMPANY,

Station 27

Cincinnati, Ohio.

$\frac{\$15}{15} = \frac{30}{30}$

DOUBLE YOUR SALARY

Don't spend spare time thinking what you might be if your salary were doubled! Doing, not thinking, will make your wish a reality. Our free booklet, "Are Your Hands Tied?" tells you what to do and how to do it. Thousands have already doubled or largely increased their salaries by following our plan. Under our guidance you can do the same. Act today! I. C. S. Textbooks make it easy for those already at work to

Learn By Mail

Mechanical, Steam, Electrical, Civil, Mining, Telephone, and Telegraph Engineering; Shop and Foundry Practice; Mechanical Drawing; Architecture; Plumbing; Sheet-Metal Pattern Drafting; Chemistry; Ornamental Design; Lettering; Book-keeping; Stenography; English Branches; Teaching; Locomotive Running; Electrotherapeutics; German; Spanish; French.

Circular free. State subject that interests you.
INTERNATIONAL CORRESPONDENCE SCHOOLS,
Box 799, SCRANTON, PA.



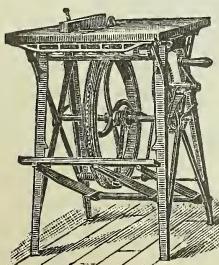
Good Bye

old whitewash brush with your hard work and waste of time.

The Hardie Whitewashing Machine
not only works much faster but forces the liquid into every crack and destroys insect life which a brush would pass over.

Send \$7.50 for the complete machine, express prepaid, if you are not satisfied we return the money. Full particulars if you need them. Address Dept. J

HARDIE SPRAY PUMP
— MFG. CO. —
DETROIT, MICH.
WINDSOR, ONT.

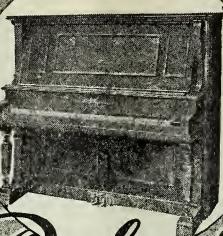


BARNES' Hand and Foot Power Machinery.

This cut represents our combined circular saw, which is made for bee-keeper's use in the construction of their hives, sections, boxes, etc., etc.

Machines on Trial.
Send for illustrated catalog and prices. Address W. F. & Jno. Barnes Co., 545 Ruby St., Rockford, Illinois.

The Ideal Piano



Packard

Built anticipating the demand of those satisfied with nothing but the best and looking for a piano of the **Highest Artistic Creation**

Are you considering the purchase of a piano? Our proposition will prove more entertaining than any you have had. Catalog and full information free on application.

THE PACKARD COMPANY
P. O. Box F Fort Wayne, Indiana

THE BREAK DOWN

is usually in the wheel. They receive the strain and wear. They dry out, spokes and felos rot, tires come loose. Get the service out of wheels you do out of gears by using

Electric Metal Wheels.



You usually have a wagon for a life time. Electrics are the staunchest, tightest, easiest running wheels made. Straight or staggered oval steel spokes, cast in the hub, hot riveted in tire. Broad tires, no rutting, light draft, any height, fit any wagon.

Write for free illustrated catalogue on Electric Wheels and Handy Wagons.

ELECTRIC WHEEL CO.,
Box 95, Quincy, Ills.

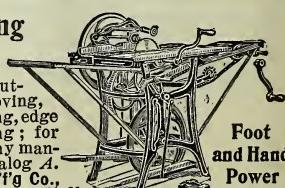


SPRAYING

Our line of sprayers and appliances fits every man's needs. Hand, Knapsack, Bucket, Field, Barrel, and Power sprayers, twenty styles. Best nozzles made, attachments, formulas etc. Select the useful and reliable. Catalog free.
THE DEMING CO., Salem, Ohio,
Western agents, Henton & Hubbell, Chicago, Ill.

Wood-working Machinery.

For ripping, cross-cutting, mitering, grooving, boring, scroll-sawing, edge moulding, mortising; for working wood in any manner. Send for catalog A. The Seneca Falls M'fg Co., 44 Water St., Seneca Falls, N. Y.



Foot
and Hand
Power

READY FOR

Prompt Delivery

Red-clover Untested Italian Queens: Each, \$1; six, \$ 5.70.
 Red-clover Tested Italian Queens: Each, \$2; six, 11.40.
 Red-clover Select T's'd It'n Queens: Each, \$3; six, 17.10.
 Italian Breeding Queens: Each, \$5.00, \$7.50, and \$10.00.
 Best Imported Italian Queens: Each, \$5.00.

If you are in a hurry, send us your order.
 If you want good queens, send us your order.
 We do not handle cheap queens.
 If you want Nuclei or Full Colonies, let us quote you
 prices. State how many you can use.

Gleanings in Bee Culture, one year, and an Untested
 Italian Queen, for only \$1.00. We have already mailed
 some premium queens, and expect to send them out within a
 week after orders are received. Don't delay if you want a
 queen early when she will do you the best service. Queen
 circular free.

The A. I. Root Co., Medina, O.

Notice.

Have all queen orders can fill by
 June 1st. Orders booked and filled
 in turn. W. O. VICTOR,
 WHARTON, TEX.

Pure Italian Queens in State of Washington!

My friends and patrons I wish to thank for their many kind words; my aim is to do still better. Mis-mating will be rare if ever. I keep only pure stock. Have imported queens from some of the most prominent breeders, and queens are reared by the natural-swarming process. Prices in May and June: Tested, \$1.50; untested, \$1.00; after June, 25 cts. less for either. Robt. Mirring, Dryad, Lewis Co., Wash.

When you need Queens

and want your order filled at once with the *best* queens that money can buy, we can serve you and guarantee satisfaction. We have a fine strain of Italians that can not be excelled as honey-gatherers. We can furnish queens from either imported or home-bred mothers. Choices tested, \$1.00 each. Untested, 75c; \$8.00 per doz.

J. W. K. Shaw & Co., Loreauville, La.

Do You Know that you could come nearer getting what you want, and when you want it, from the New Century Queen-Rearing Co. (John W. Pharr & C. B. Banks-ton), than anywhere in the United States? Untested, 50c.; tested, 3 and 5 band, 75c; all other races, \$1.00. Send for circular. Berclair, Goliad Co., Texas.

For 1903 You Require **PERFECT QUEENS**
I Supply

Norristown, Pa., March 14, 1903.
 Dear Sir.—Find inclosed \$1.00 for one untested Golden queen. . . . I wish you would send a queen just like I bought of you last spring. It is one of the best and prettiest queens I ever had. At present my apiary numbers 35 colonies. Yours truly,

HENRY A. MARKLEY.

These queens are giving general satisfaction. Try some. Address
 GEO. J. VANDE VORD, Daytona, Fla.

Leather-colored Italians For Sale.

My bees were awarded 1st premium at the Minnesota State Fair in 1902 and 1901. Queens guaranteed in quality and transportation. In standard 8 or 9 frame hives, \$5.00 each on car. A reduction on lots of 20 and over. Strong colonies now ready for shipment.

W. R. ANSELL, Mille Lacs Apriaries,
 Milaca, Minnesota.

"Dollar Italian Queens"

Ready for delivery May 10. Send for price list.
 E. E. Lawrence, : Doniphan, Missouri.

QUEENS DIRECT FROM ITALY

Fine, reliable. English price list sent on application. Beautiful results obtained last year. OUR MOTTO—“Whatsoever ye would that men should do to you, do ye even so to them.” Address
 MALAN BROTHERS, Luserna, San Giovanni, ITALY.

QUEENS

Golden Italian &
Leather Colored

Warranted to give satisfaction, those are the kind reared by **Quirin-the-Queen-Breeder**. We guarantee every queen sent out to please you, or it may be returned inside of 60 days and another will be sent "gratia." Our business was established in 1888, our stock originated from the best and highest-priced Long-tongued Red-clover Breeders in the U. S. We send out fine queens, and send them promptly. We guarantee safe delivery to any State, continental island, or European Country.

The A. I. Root Co. tells us that our stock is extra fine, while the editor of the *American Bee Journal* says that he has good reports from our stock, from time to time. Dr. J. L. Gandy, of Humboldt, Nebr., says that he secured over 400 pounds of honey (mostly comb), from single colonies containing our queens.

A FEW TESTIMONIALS.

P. F. Meritt, of No. 13 Breckenridge St., Lexington, Ky., writes: The bees sent me last July did splendidly. Each colony has at least 75 lbs. of honey—pretty good for two-frame nuclei.

Mr. J. Roorda, of Demotte, Ind., writes: Send me six more queens, the 48 sent me last spring are hustlers.

Mr. Wm. Smiley, of Glasgow, Pa., writes: Your bees beat all the rest, now send me a breeder of the same kind.

A. Norton, Monterey, Calif., writes: Your stock excels the strain of Mr. —, which is said to outstrip all others. Your stock excels in profitable results as well as in beauty.

Queen-rearing is our specialty; we give it our undivided attention, and rear as many queens (perhaps more) as any breeder in the North. No order is too large for us, as we keep 300 to 500 on hand ready to mail. Send all orders to

Quirin-the-Queen-Breeder,

Parkertown,
OHIO.

Price of Queens Before July First.

	1	6	12
Selected Warranted.....	\$1.00	\$3.00	\$9.50
Tested.....	1.50	8.00	15.00
Select Tested.....	2.00	10.50	
Extra Selected Tested—the best that money can buy.....	4.00		
Two-frame Nuclei, no Queen.....	2.50	14.00	25.00

Add the price of whatever queen is wanted to that of nuclei. Our nuclei build up fast, and if not purchased too late will make some surplus.



Queens

My specialty is queen-rearing. I rear two strains only—Long-tongued Red-clover Three-banded and the Golden Five-banders that work red clover as well as the three-banders. These two strains are the best bees in this country, all things considered. I furnish more dealers with queens than any other breeder in this country. Why? Because the queens give their customers the best satisfaction. I insure all to be purely mated. Untested, 75¢ each; tested, in April, \$1.25—after April, \$1.00 each. My former address was Caryville, Tenn., but my queen trade has doubled for several years and I have moved to Texas. Remit by postal money order to Daniel Wurth, Karnes City, Karnes Co., Texas.

Laws' Leather-colored Queens.

Laws' Improved Golden Queens.

Laws' Holy Land Queens.

W. H. Laws:—Your queens have proved to be excellent. My apiary stocked with your *Leather* queens are a sight to behold during a honey-flow, and the *Goldens* are beyond description in the line of beauty. Yours are the best for *comb honey* I ever saw. I want more this spring—*E. A. Ribble, Roxton, Tex., Feb. 19, 1903.*

W. H. Laws:—The 75 queens (Leather) from you are dandies. I introduced one into a weak nucleus in May, and in September I took 285 lbs. of honey, leaving 48 lbs. for winter. My crop of honey last season was 48,000 lbs. I write you for prices on 50 nuclei and 150 Leather queens.—*Joseph Farnsworth, Idaho Falls, Idaho, Feb. 16, 1903.*

Prices of Queens: Each, \$1.00; 12, \$10.00. Breeders, extra fine, guaranteed, each \$3.00. Send for price list.

W. H. Laws, Beeville, Texas.

QUEENS for BUSINESS and PROFIT

These are to be had of Will Atchley. He is now prepared to fill all orders promptly, and breeds six different races in their purity. You must remember that all of the PURE Hollylands that now exist in the U. S. originated from the Atchley apiaries, and they have the only imported mothers known to the United States. Untested queens from these races, 3 and 5 banded Italians, Cyprians, Albino, Hollylands, and Carniolans, bred in their purity, from 5 to 35 miles apart, February and March, \$1.00 each, or \$9.00 per dozen. All other months, 75¢ each, \$4.25 for six, or \$3.00 per dozen. Tested queens of either race, from \$1.50 to \$3.00 each. Breeders from \$3.50 to \$10.00 each. 1, 2, and 3 frame nuclei and bees by the pound a specialty. Prices quoted on application. Safe arrival and perfect satisfaction guaranteed. A trial order will convince you. Price list free. **WILL ATCHLEY,**
P. O. Box 79, Beeville, Bee County, Texas.

SQUEENS--\$BEES--NOW.

A. L. Swinson, Queen-breeder, furnishes best to be had in U. S. First-handed, Warranted queens, \$1.00. Tested, \$1.50. Breeders, \$5 to \$10. American Albino Italians, and Adels mated to Albinos.

SWINSON & BOARDMAN,
Box 358, Macon, Ga.

Do You Buy Queens

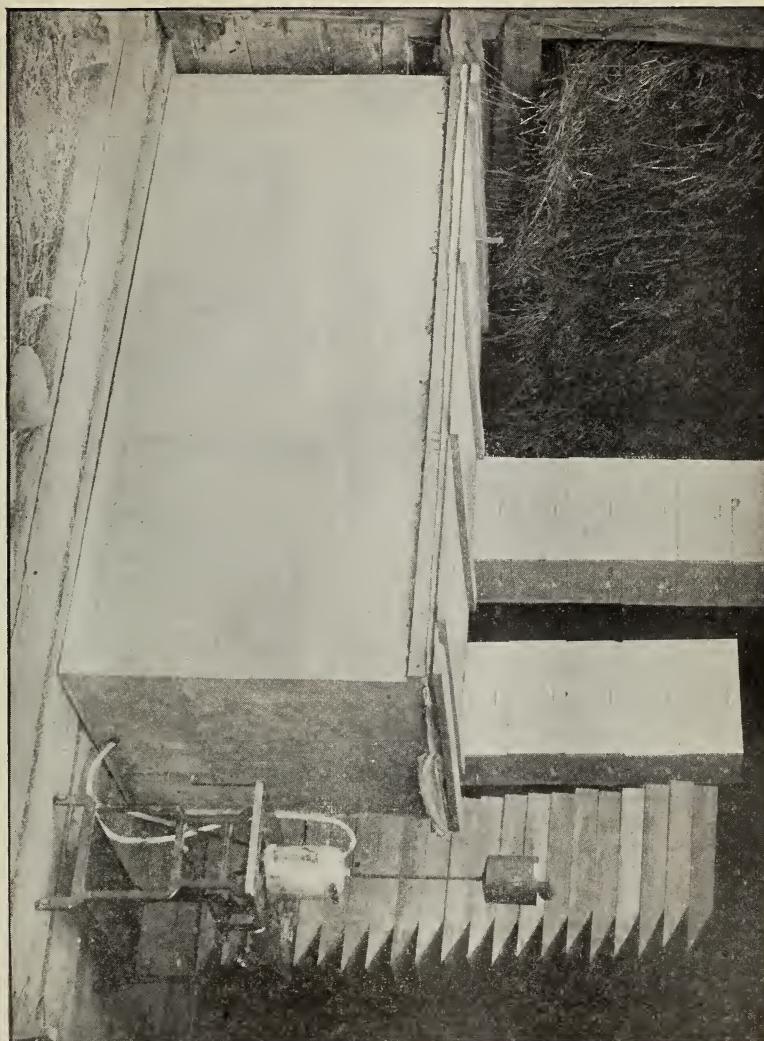
If so, it will pay you to investigate my claims. I breed from best honey-gathering stock, and rear queens by best-known methods. I guarantee good queens, and beautiful, gentle bees. Some of my customers have bought 100 to 300 queens per year for their own yards. Write for circular and information. Untested queens, \$1.00; \$9.00 per dozen; tested, \$1.25.

J. B. CASE, Port Orange, Fla.

There is a descriptive article accompanying this cut in the May REVIEW showing how Mr. Huff destroyed foul brood in combs by fumigating them with formalin gas. Send ten cents for this number, and with it will be sent two other late but different issues, and the ten cents may apply on any subscription sent in during the year. A coupon will be sent entitling the sender to the REVIEW one year for only 90 cents.

W. Z. Hutchinson, Flint, Michigan.

C. A. Huff's Tank for Fumigating Foul-Broody Combs.



**Send
10¢**

and the names and addresses of ten fruit-growers to

Southern Fruit Grower, Chattanooga, Tennessee,

for a year's subscription. Regular price 50c per year. Offer good only to new subscribers. Twenty pages or more every month. If you grow any kind of fruits you can not well afford to be without it. Samples free.

SLUG SHOT

kills currant-worms, potato-bugs, cabbage, worms, and insects on flowers; used 22 years successfully. Sold by the Seed-dealers. For booklet on Bugs and Blight, address

B. Hammond, - Fishkill-on-Hudson, - New York.



BUSINESS STILL BOOMING.

A late cold spring has checked orders in some directions, but not enough to relieve the pressure on us for goods. Most of our small orders, or less than car-load shipments, go out within a few days; but our dealers have to wait three or four weeks, and sometimes longer, for carload shipments. We are gaining a little on carload orders, and hope, by the end of the month, if we do not get too many new orders, to be in better shape.

BEESWAX MARKET.

The market for beeswax is already showing a weakening tendency. We have stock enough on hand to finish the season without buying any more from wax-dealers; and if present conditions continue we shall have to mark our price down a notch with June 1st issue. For a month or two past we have been accepting it right and left till we have accumulated a large stock, but it takes a large stock to keep us going. We have shipped, since the first of September last, over 100,000 lbs. of foundation. During April our shipments were over 22,000 lbs., and May bids fair to equal or surpass it.

PAPER HONEY-BAGS.

We hereby withdraw the prices named a month ago on paper bags for putting up candied honey. We find a number of things involved in this bag business which we had not taken into account when we made the announcement which we did. Mr. Aiken, of Loveland, Col., had been making some preparations to supply the demand for bags, but has turned the matter entirely over to us, inasmuch as we have better facilities for distributing them through our agencies. Owing to the fact that the printing of the label on these bags, when properly done, must be done before the bag is made up or coated, it is going to be impossible to supply them with any other than the regular stock label except in very large quantities, at least 10,000 of a size. We hope to arrange to fill in name and address on small quantities in a satisfactory manner; will try to have complete announcement ready for next issue. We have the 2¹/b. size in stock of the dark unbleached paper, and without any printing; will furnish these to those who wish to try a few at 1 cent each, postpaid, in lots of 10 or more.

Special Notices by A. I. Root.

WANTED.

Seed of the Rocky Mountain bee-plant and spider-plant.

SEED POTATOES AT 60 CENTS A BUSHEL.

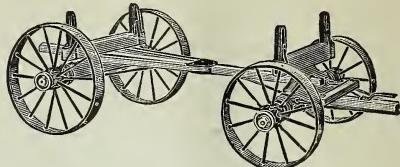
We have about 150 bushels left, principally Red Bliss Triumph, Freeman, Lee's Favorite, California Russet, Maule's Commercial. We have also a few Early Michigan, Twentieth Century, and King of Michigan. While they last, any of the above at 60 cts. per bushel, except the Triumph, and these will be only 50 cents a bushel.

THE NEW ONION CULTURE, NEW EDITION.

Our friends may remember that the first edition, by T. Greiner, came out in 1891. The present edition is greatly enlarged, and substantially bound in cloth. It not only tells all about sowing the seeds, and starting plants under glass, but it is a pretty good treatise on growing onions generally. It speaks of the new Giant Gibraltar onion, also of the Beaulieu hardy white onion that stands over winter and gives the first nice ripe onions in the spring. The book treats especially, however, of growing onions here in America, to take the place of the fancy Spanish imported onions. It has 150 pages and is fully illustrated. Price 50 cts. postpaid. We can mail it from this office.

Farm Wagon only \$21.95.

In order to introduce their Low Metal Wheels with wide Tires, the Empire Manufacturing Company, Quincy, Ill., have placed upon the market a Farmer's Handy Wagon, that is only 25 inches high, fitted with 24 and 30 inch wheels with 4-inch tire, and sold for only \$21.95.



This wagon is made of the best material throughout, and really costs but a trifle more than a set of new wheels, and fully guaranteed for one year. Catalog giving a full description will be mailed upon application by the Empire Manufacturing Co., Quincy, Ill., who will also furnish metal wheels at low prices made any size and width of tire to fit any axle.

Readers of Gleanings

desiring to know the results of my forty years' experience in rearing queen-bees, and to learn of my new process of producing queens, can do so by purchasing a copy of IMPROVED QUEEN-REARING. The book and a valuable Adel breeder sent by mail for \$2. Pr spectus and catalog ready. Adel bees have a world-wide reputation.

Henry Alley, Wenham, Mass.

Queens == 1903 == Queens.

We have ten different yards five to twenty miles apart, where Italians, Cyprians, Holylands, Carniolans, and Albinoes, are bred for business. Tested queens, \$1.50; \$8.00 for 6; \$15.00 per dozen. Untested, \$1.00 each; \$5.00 for 6; \$9.00 per dozen. Our best and finest breeders, \$5.00 each. One and two frame nuclei a specialty. Bees and Queens in any quantity to suit purchaser. Safe arrival and reasonable satisfaction guaranteed. ORDER "The Southland Queen," \$1.00 per year. Send for sample copy and our 1903 catalog; tells how to raise queens and keep bees for profit.

Root's Supplies.

The Jennie Atchley Co., Box 18, Beeville, Tex.

A Great Paper Enlarges

The Feather, Washington, D. C., has been enlarged to nearly twice its former size, and is much improved in every way. The best features of the old size are retained. Positively the most beautifully illustrated poultry paper published. It's practical too. Subscription price, 50 cts. per year; 5 years, \$1.00; 9 months and picture of fowls in natural colors, 25 cts.; sample free.

G.E. Howard & Co., 305 10th St., N.W., Wash'tn, D.C.

The A. I. Root's Co's Goods in Oklahoma.

Save freight by buying of F. W. VAN DE MARK, RIPLEY, O. T. Catalog free for postal.

S. D. BUELL

Manufactures bee-hives, and is agent for The A. I. Root Co.'s goods, which are sold at factory prices. Catalog sent free. Bees for sale. Beeswax wanted.

Union City, Mich.

POULTRY JOURNAL How to Make Poultry Pay. A paper worth a dollar, but will send it to you one year on trial, including book, Plans for Poultry Houses, for 25c. Sample copy FREE. Inland Poultry Journal, Indianapolis, Ind.

HOW TO Make Money

Any one willing to work can make \$18.00 per week selling our absolutely new Pocket Dictionary and Atlas of the World combined; 90 clear concise maps; 35,000 words defined; fits the pocket; worth a dollar to anybody. Send 25 cents for sample and terms.

Rand, McNally & Co., Chicago, Illinois.

Envelopes!!

Printed to Order \$1 per 1000

Heavy, white, high-cut, size 6 $\frac{1}{2}$. A neat little coupon on each envelope will earn you dollars. Other stationery cheap. For particulars and sample, address at once

Howard Co., 516 Masonic Temple, Chicago, Ills.

Golden or Leather-colored Honey Queens

bred from the Laws strain. Untested, 90 cts.; tested, \$1.00; selected tested, \$1.50; extra selected tested, \$2.00; breeders, \$2.50 to \$5.00. None better.

H. C. TRIESCH, JR., Dyer, Ark.

Wants and Exchange.

Notices will be inserted under this head at 10 cts. per line. You must SAY you want your ad't in this department, or we will not be responsible for any error. You can have the notice as many lines as you please; but all over ten lines will cost you according to our regular rates. We can not be responsible for dissatisfaction arising from these "swaps."

WANTED.—To sell bees and queens.

O. H. HYATT, Shenandoah, Iowa.

WANTED.—Langstroth extracting-combs (wired) in any quantity. A. D. D. Wood, Lansing, Mich.

WANTED.—To sell Sir Walter Raleigh seed potatoes, 60c bu. A. P. Lawrence, Hickory Corners, Mich.

WANTED.—Man to raise queens, and take care of bees.

F. H. FARMER, 182 Friend St., Boston, Mass.

WANTED.—To sell 400 good extracting combs. L. size, 12 $\frac{1}{2}$ cts. each.

F. H. MCFARLAND, Hyde Park, Vt.

WANTED.—To sell two colonies of bees, also a full line of supplies for the bee-business, very cheap. A. WILSON, Maywood, Ill.

WANTED.—Apriarists for the West Indies. Several of our correspondents want help. Write at once for particulars. THE A. I. Root Co., Medina, O.

WANTED.—Having facilities for rendering wax by steam, I will pay cash for old comb.

N. L. STEVENS, R. D. 8, Moravia, N. Y.

WANTED.—To sell 200 5-gal. honey-cans, all in A No. 1 shape, at 10c per can, f. o. b. at Detroit.

CHAS. C. CHAMBERLIN, Romeo, Mich.

WANTED.—To exchange or sell 50 colonies of Italian bees, for honey or cash.

DAVID DANIEL, Hawthorn, Pa.

WANTED.—To sell single-comb White Leghorn eggs for hatching at \$1.00 for 26; \$3.00 per 100.

J. P. WATTS, Kerrmoo^r, Pa.

WANTED.—At once, 200 swarms bees. Will pay cash.

QUIRIN, THE QUEEN-BREEDER, Parkertown, Ohio.

WANTED.—To sell first-class tupelo honey in barrels of about 375 lbs. net, at 6c f. o. b.

G. F. TICKER, Iola, Fla.

WANTED.—To exchange for honey, or cash, 60-lb. cans, good as new, per case of two cans, f. o. b. here, 40 cents.

G. L. BUCHANAN, Holliday's Cove, W. Va.

WANTED.—Cowan extractor for taking frames 12 inches deep; also four-inch smoker and honey-knife.
L. CLARK, Wiscoy, Minn.

WANTED.—To sell my farm of 102 acres and 40 colonies of bees; old age, the reason; correspondence solicited.
WM. G. SNODGRASS,
Montrose, Henry Co., Mo.

WANTED.—To sell for cash, 5-gal. square tin cans, used for honey, at about half price of new cans. For prices, etc., address OREL L. HERSHISER,
301 Huntington Ave., Buffalo, N. Y.

WANTED.—To exchange bees for foot-power saw. Sixty colonies of bees in fine condition for sale; also two fine improved farms for sale.
F. L. WRIGHT, Webberville, R. F. D. 2, Mich.

WANTED.—To exchange or sell for cash, selected, second-hand 60-lb. cans, practically as good as new, for 35 cts. per case f. o. b. Chicago.
B. WALKER, Clyde, Illinois.

WANTED.—To sell a Barnes foot-power saw, power attachment complete, good as new; out of the business. Also Wilson bone-mill (never used 2 hours). Both cheap.
H. L. GRAHAM, Grandview, Iowa.

WANTED.—To sell or exchange 25 Simplicity hives new and complete, and 100 Simplicity bodies, practically new. Any reasonable offer will be accepted.
A. Y. BALDWIN, De Kalb, Ill.

WANTED.—To sell 75 Langstroth hives (10 and 12 frame), with 1000 extracting-combs; also 2000 lbs. extracted basswood honey.
WILBER WOOD, Ono, Wis.

WANTED.—To exchange a genuine Stradivarius violin 150 years old, foundation-mill, bone-mill, shotgun, revolver, clothes-wringer, game roosters, and fox-hound pups.
ELIAS FOX, Hillsboro, Wis.

WANTED.—To buy for cash, cheap, 10-frame portico hives with simplicity upper story, with or without brood-frames, in flat. Write quick.

ALBERT L. MARTIN,
Levardsburg, Delaware Co., Ohio.

WANTED.—All the bulk comb, extracted, and section honey that we can buy in the State of Texas. We pay spot cash for honey. Write us now or when you have honey.

THE HYDE BEE CO., Floresville, Tex.

WANTED.—To sell complete volumes of Gleanings, Review, and American Bee Journal, and also other bee papers, extending over the past 15 years; nearly all of the bee-journals are bound; also five bee-books. Am going out of the bee-business.

G. F. TUBBS, Annincreek, Pa.

WANTED.—Agents to sell and attach automatic cut-offs to grinding-mills, which automatically stop them when hoppers become empty. Especially adapted to Aermotor windmills. For full particulars address BONIFACE STRITTMATTER,
Bradley Junction, Pa.

WANTED.—If you desire the benefit of my thirty years' experience with bees, and desire to work in my bee-yards, and work on the farm when there is no work to do with the bees, send me your address. Or I could use an experienced man. Bees and empty hives bought. State experience, and wages expected.
W. L. COGGSSHALL, Groton, N. Y.

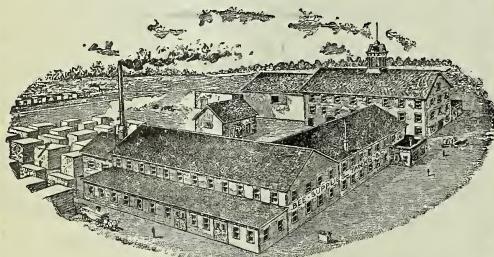
WANTED.—To sell S. W. $\frac{1}{4}$ of S. E. $\frac{1}{4}$ sec. 26, range 26, Crystal Lake Tp., Benzie Co., Mich.; 40 acres just outside corporation of Frankfort; a nearly finished cottage of six rooms, a small stable, 25 bearing apple-trees, a few peach-trees. From front porch can be seen a delightful view of the little city of Frankfort, Lake Michigan, harl. steamers, etc. Unexcelled as a summer home or a fruit-farm. Only a few hours from Toledo, Detroit, Chicago, Minneapolis, and other cities. Write Gen Pass, Agent of Toledo & Ann Arbor R. R., Toledo, Ohio, for pamphlet describing Frankfort. Cheap at \$2200; if bought soon can be secured at \$1400. Also for sale 160 acres, 15 miles east of Frankfort; only \$2.50 per acre. 25 acres ready for the plow. Write C. L. Linkletter, Agent, Frankfort, Mich., or W. A. HOBBS, Owler, Traer, Iowa.

We Have Not Moved.

The government, recognizing the necessity of a great and growing business enterprise, for better mail service has given us a postoffice on our premises, which enables us to change mails with the passing trains instead of through the Wetumpka, Alabama, postoffice more than a mile distant. This gives us our mails about two hours earlier, and also one hour for making up outgoing mail. This will be particularly helpful in our queen business. We are now booking orders for Italian queens, Long-tongued and Leather-colored; both good.

J. M. Jenkins,
Honeysuckle, Alabama.

Shipping-point and Money-order
Office at Wetumpka, Alabama.



Kretchmer M'f'g Company,
Box 60, Red Oak, Iowa.



BINGHAM SMOKER.

Dear Sir.—Inclosed find \$1.75. Please send one brass smoke-engine. I have one already. It is the best smoker I ever used. Truly yours,

HENRY SCHMIDT, Hutto, Tex.

PAGE & LYON,
New London, Wisconsin.

MANUFACTURERS OF
AND DEALERS IN . . .

**BEE-KEEPERS'
SUPPLIES. . .**

Send for Our Free New Illustrated
Catalog and Price List. . . .

**BEE-
SUPPLIES!**

Best-equipped factory in the West; carry a large stock and greatest variety of every thing needed in the apiary, assuring BEST goods at the LOWEST prices, and prompt shipment. We want every bee-keeper to have our FREE ILLUSTRATED CATALOG, and read description of Alternating Hives, Ferguson Supers. Write at once for catalog.

Agencies.

Trester Supply Company, Lincoln, Neb.
Shugart & Ouren, Council Bluffs, Iowa,
Foster Lumber Company, Lamar, Colo.

MADE TO ORDER

Bingham Brass Smokers.

Made of sheet brass, which does not rust or burn out; should last a lifetime. You need one, but they cost 25 cts. more than tin of the same size. The little open cut shows our brass hinge put on the three larger sizes. No wonder Bingham's four-inch smoke-engine goes without puffing, and does not drop inky drops. The perforated steel fire-grate has 381 holes to air the fuel and support the fire.

Heavy tin smoke-engine, 4-inch stove, per mail, \$1.50; 3½-inch, \$1.10; 3-inch, \$1.00; 2½-inch, 90c; 2-inch, 65c. Bingham smokers are the originals, and have all the improvements, and have been the standard of excellence for 23 years. Only three larger ones brass.

T. F. Bingham, Farwell, Michigan.

We announce with sorrow the death of our father, John Nebel, the senior member of this firm, who passed away on Tuesday, May 5th, in his seventieth year.

The business of the firm will be conducted as in the past, and all orders intrusted to our care will receive prompt attention.

Thanking our friends for past favors, and hoping for a liberal share of your future patronage, we remain

Yours very truly,
JOHN NEBEL & SON,

Oregon Bee-keepers



For years we have supplied you with a portion of your requirements in bee-keepers' Supplies, for which we thank you. We are better prepared than ever to take good care of orders this season. We have acquired the business of Buell Lamberson's Sons, of this place, and have the agency for this State for

The A. I. Root Co., Medina, Ohio.

One carload is already on the way, and others will follow. If you require special goods or anything not usually kept in Western stocks, we can get it for you on our next car.

Seeds, Fertilizers, Trees, Garden Tools, Poultry and Bee Supplies.

Portland Seed Company, Portland, Oregon.

Headquarters in CALIFORNIA !

We wish to remind GLEANINGS readers that we are again ready to serve them with whatever they require in Bee-keepers' Supplies. We not only have a good assortment of our own manufacture but we can furnish a

Full Line of Root's Sundries such as Smokers, Sections, Cowan Extractors, etc. Let us have your name and address at once, and we will send you our catalog.

Union Hive & Box Co.
Los Angeles, Cal.



Montana, Minnesota, Dakota, and West'n Wisconsin BEE - KEEPERS

Our 83d annual catalog (for 1903, 92d edition) is now ready. Send for a copy at once. We have a full line of goods in stock, and can fill orders promptly. Save freight by ordering of the St. Paul branch. **Bees and Queens.** Orders booked now for spring delivery. **Honey and Wax.** We handle honey and wax. Write for particulars.

The A. I. ROOT COMPANY
Northwestern Branch,
1026 Mississippi St.,
ST. PAUL, MINNESOTA
H. G. Acklin, Manager.

Texas Bee-keepers.

STOCK.—Our warehouse is now stocked with a good assortment of Hives, Sections, Extractors, and other supplies direct from Medina.

PROMPTNESS.—We can therefore fill your orders promptly. Do not suffer long delay by ordering from some distant point but send orders here.

HEADQUARTERS for bee-keepers in San Antonio. Whenever you visit San Antonio you are invited to call at our office and make it your headquarters. See our display of supplies. Leading bee-journals on file for your perusal too.

WANTED.—Beeswax and Honey. Write for particulars.

The A. I. Root Co.,
438 West Houston Street,
San Antonio, Texas.

26th Year
Dadant's Foundation.

WHY DOES IT SELL SO WELL?—Because it has always given better satisfaction than any other. Because in 25 YEARS there have been no complaints, but thousands of compliments.

WE GUARANTEE SATISFACTION.—What more can anybody do? Beauty, purity, firmness, no sagging, no loss. **PATENT WEED PROCESS OF SHEETING.**

BEESWAX WANTED AT ALL TIMES.—Send name for our catalog, samples of foundation, and veil material. We sell the best veils, either cotton or silk.

LANGSTROTH ON THE HONEY-BEE, Revised. The classic in bee-literature. \$1.20 by mail.

**Bee-Keepers Supplies
of All Kinds.**

DADANT & SON,
Hamilton, Ill.

BEEKEEPERS Notice

We sell the Root goods here at Root's factory prices, which means the freight is paid to Des Moines, Iowa.

Immense stock and every variety of the best up-to-date goods now on hand packed for prompt shipment.

Satisfaction is guaranteed on every order sent us. Thousands have been pleased with their goods from us. We can satisfy you.

Write for estimates, sending list of what you will need, and get our discounts for early orders. We will save you money. Send to-day for 1903 catalog.

JOS. NYSEWANDER,
710-12 W. Grand Ave.
DES MOINES, IOWA.

Why Not



Place your order now? We will make you special prices for early delivery. We are headquarters in Central California for Root's Cowan Extractors, Sections, Weed Foundation, Smokers, etc., as well as a full line of local-made supplies. We can give you prompt service. We solicit your patronage.



Madary's Planingmill
Fresno, California.